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United States  
Department of  
Agriculture

Forest Service

Tongass National  
Forest

R10-MB-606a

March 2007



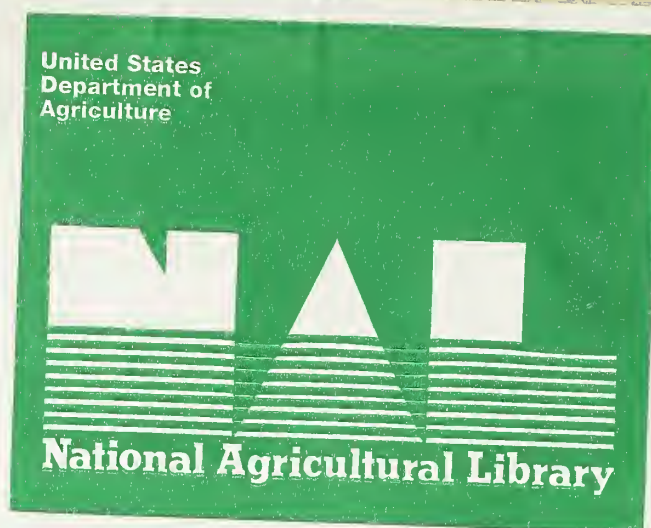
# Scratchings Final Environmental Impact Statement



*Suemez Island*

# ACRONYMS

ACHP	Advisory Council
ACMP	Alaska Coastal Ma
ADEC	Alaska Departmen Conservation
ADF&G	Alaska Departmen
ADNR	Alaska Departmen
AFRPA	Alaska Forest Res
AHMU	Aquatic Habitat M
ANCSA	Alaska Native Cla
ANILCA	Alaska National Interest Lands Conservation Act (1980)
ASQ	Allowable Sale Quantity
BA	Biological Assessment
BE	Biological Evaluation
BMP	Best Management Practice
CCF	Hundred Cubic Feet
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CRM	Copper River Meridian
CT	Commercial Thinning
CZMA	Coastal Zone Management Act (1972)
DBH	Diameter (of a tree) at Breast Height (about 4.5 feet high)
DOF	Division of Forestry (Alaska Department of Natural Resources)
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FSH	Forest Service Handbook
FSL	Forestry Sciences Laboratory
FSM	Forest Service Manual
FVS	Forest Vegetation Simulator
GIS	Geographic Information System
GMU	Game Management Unit
GPS	Global Positioning Unit
HIS	Habitat Suitability Index
HUC	Hydrologic Unit Code (United States Geological Survey)
IDT	Interdisciplinary Team
LCR	Live Crown Ratio
LTF	Log Transfer Facility
LSTA	Logging System & Transportation Analysis



NFMA	National Forest Management Act (1976)
NFS	National Forest System
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOI	Notice of Intent
NWI	National Wetland Inventory
OGR	Old-growth Reserve
OHV	Off-Highway Vehicle
PNW	Pacific Northwest Forest and Range Experiment Station
POG	Productive Old Growth
R10	Region 10 (Alaska Region of Forest Service)
RAW	Reasonable Assurance of Windfirmness
RCS	Road Condition Survey
RMA	Riparian Management Area
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
RPA	Forest and Rangeland Renewable Resources Protection Act (1974)
SEIS	Supplemental Environmental Impact Statement
SHPO	State Historic Preservation Office
TES	Threatened and EndangeredSpecies
TTRA	Tongass Timber Reform Act (1990)
U.S.C.	United States Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
VCU	Value Comparison Unit
VPA	Visual Priority Area
VQO	Visual Quality Objective
VRM	Visual Resource Management
WAA	Wildlife Analysis Area



# Final Environmental Impact Statement

## Scratchings Timber Sale

**Tongass National Forest  
USDA Forest Service  
Alaska Region**

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### Abstract

The USDA Forest Service proposes to harvest approximately 36 million board feet (MMBF) of timber in the Scratchings project area on Suemez Island, Craig Ranger District, Tongass National Forest. Timber volume would be offered through the Tongass timber sale program. The actions analyzed in this Final Environmental Impact Statement (EIS) are designed to implement direction contained in the 1997 Tongass Land and Resource Management Plan, as amended (Forest Plan) and the Tongass Timber Reform Act. The Final EIS describes five alternatives, which provide different combinations of resource outputs and spatial locations of harvest units. The action alternatives would make between 17 and 36 MMBF of timber available for harvest within the project area. The significant issues addressed by the alternatives and the Final EIS include: 1) timber harvest economics; 2) cumulative impacts in the Port Dolores Watershed; and 3) roadless areas.

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# Summary



# Scratchings Final EIS Summary

## Introduction

This summary describes the effects of proposed timber sale(s) and an access management plan and several alternatives on Suemez Island in the Scratchings project area. It describes the “No Action” alternative (Alternative 1), a “Proposed Action” (Alternative 2) and three other alternative strategies for timber harvest. The four action alternatives include road building, road storage, and road decommissioning activities, as well as use and maintenance of an existing log transfer facility (LTF) at Port Refugio. The details of the Scratchings Timber Sale project are fully presented in the Scratchings Final Environmental Impact Statement (EIS). The Final EIS discloses the environmental effects that are expected from the Proposed Action and each of the other alternatives, including the No-action Alternative.

The Scratchings Timber Sale project is located on Suemez Island in Southeastern Alaska on the Craig Ranger District, Tongass National Forest, Alaska Region (Region 10), of the Forest Service, U.S. Department of Agriculture (Figure 1-1 in Chapter 1 of the Final EIS). Suemez Island is located west of Prince of Wales Island and 12 miles southwest of Craig, Alaska.

## Proposed Action

The proposed action for the Scratchings Timber Sale project includes timber harvest and the development of an access management plan. The proposed timber harvest would provide for timber sale opportunities resulting in the production of up to 36 million board feet (MMBF) of timber from approximately 1,919 acres. Within this area, approximately 1,565 acres would be harvested. The Proposed Action would build about 7 miles of temporary roads and 12 miles of National Forest System (NFS) road; all newly constructed roads would be placed in storage or decommissioned. About 11 miles of existing NFS road would be placed in storage or decommissioned after timber harvest. Logs would be transported to the Port Refugio LTF for shipping by barge or log raft, see Figure 2-2 in Chapter 2 of the Final EIS.

The Proposed Action modifies the project area small old-growth reserves (OGRs) to meet the minimum Forest Plan standards and

guidelines (Figure 2-2). The Proposed Action and the other alternatives are discussed in detail in Chapter 2 of the Final EIS.

### **Purpose and Need**

The Scratchings Timber Sale project is proposed at this time to respond to goals and objectives of the Forest Plan, and to help move the project area toward desired conditions described in that plan. The Forest Plan includes forest-wide goals and objectives. Land Use Designations (LUDs) identify area-specific goals, objectives, and desired conditions. Applicable forest-wide goals and objectives found in the Forest Plan (pages 2-3 and 2-4) include:

- “Manage the timber resource for production of sawtimber and other wood products from suitable timber lands made available for timber harvest, on an even-flow, long-term sustained yield basis and in an economically efficient manner.”
- “Seek to provide a timber supply sufficient to meet the annual market demand for Tongass National Forest timber, and the market demand for the planning cycle.”
- “Provide a diversity of opportunities for resource uses that contribute to the local and regional economies of Southeast Alaska.”

### **Decisions to be Made**

The Forest Supervisor will decide whether and how to implement activities within the Scratchings Timber Sale project area in accordance with Forest Plan goals, objectives, and desired conditions. The decision may include the following:

- the location, amount, and method of timber harvest, road construction, log transfer facilities, and silvicultural practices;
- road management objectives;
- any necessary project-specific design criteria, mitigation measures, and monitoring requirements;
- significant restrictions on subsistence uses; and
- changes in Small Old-growth Habitat Reserves, approved as a non-significant amendment to the Forest Plan.

The Scratchings Timber Sale project area includes four Land Use Designations (LUDs) to focus the management of the National Forest System lands within different areas of the Tongass National Forest: Timber Production, Modified Landscape, Special Interest Area, and Old-growth Habitat. Approximately 3 percent of the project area is non-National Forest System Land.



## **Significant Issues**

Significant issues for the Scratchings Timber Sale project were identified through public and internal scoping. Similar issues were combined where appropriate. Three issues were determined to be significant and within the scope of the Scratchings Timber Sale project decision. These issues are addressed through the proposed action and the alternatives.

### **Issue 1 – Timber Harvest Economics**

Comments indicated people are concerned about economically viable timber sales and the impact of timber harvest on the livelihoods of residents of Southeast Alaska. Alternative 3 was designed to address this issue.

### **Issue 2- Cumulative Impacts in the Dolores Watershed from Road Building and Timber Harvest**

Some members of the Scratchings IDT were concerned about past management activities that occurred in this watershed. Alternative 4 was developed to address those concerns and modified in the Final EIS based on additional comments.

### **Issue 3 - Timber Harvest and Road Construction in Roadless Areas and Unroaded Areas**

Comments indicated no timber harvest should occur in roadless areas due to the Court of Appeals ruling in Natural Resources Defense Council vs. USDA Forest Service. Alternative 5 was developed to address this concern.

## **Alternatives Considered In Detail**

The No-action Alternative (Alternative 1) and four action alternatives were considered in detail. Figures 2-1 through 2-5 in Chapter 2 of the Final EIS display the alternatives considered in detail.

Minor modifications were made to Alternatives 2, 3, and 5 between the Draft and Final EIS to reflect results of additional fieldwork. Alternative 4 was modified to respond to concerns raised by public comment on the Draft EIS and to reflect results of additional fieldwork. Please see the descriptions below.

### **Alternative 1 - The No-action Alternative**

The analysis of this alternative represents the existing condition of the Scratchings Timber Sale project area. Approximately 22 miles of National Forest System (NFS) road would remain open. No additional road storage or decommissioning would take place. The effect of not harvesting timber or building roads in the project area at this time are analyzed under this alternative. Small old-growth reserves (OGRs) located in VCU 6330, 6350, and 6370 would remain as mapped in the

## Summary

Forest Plan and would not meet either the total size or the productive old-growth (POG) criteria as listed in Appendix K of the Forest Plan. The small OGR in VCU 6340 (that meets both total and POG acre requirements) and the Special Interest Area that acts as a medium OGR in VCU 6360 would remain the same. Future timber harvest or other activities in the project area may be considered.

### **Alternative 2 – Proposed Action**

This alternative emphasizes timber production in the project area while meeting Forest Plan standards and guidelines. Alternative 2 would construct more than two miles of road across University of Alaska land needed to access Timber Production LUDs south of Port Dolores.

Alternative 2 would provide up to 36 million board feet (MMBF) of timber from approximately 1,919 acres. Within this area, approximately 1,565 acres will be harvested. This alternative would build about 7 miles of temporary roads and 12 miles of National Forest System (NFS) road. More than two miles of this road would be built across University of Alaska land. All newly constructed roads would be placed in storage or decommissioned. About 11 miles of existing NFS road also would be placed in storage or decommissioned with this alternative. Approximately 10 miles of existing NFS road would remain open.

Alternative 2 modifies the project area small old-growth reserves (OGRs) to meet the minimum Forest Plan standards and guidelines:

- Productive old growth (POG) would be added to the north portion of the OGR in VCU 6330
- The northeast tip of the old-growth reserve in VCU 6340 would be dropped because the current OGR exceeds the size recommendation.
- POG would be added to the south portion of the OGR in VCU 6350.
- Increase the reserve acres in VCU 6370 on the east side to include more important winter deer range and to meet acreage recommendations.
- The Forest Plan mapped Special Interest Area (SIA), which includes all of VCU 6360 and portions of other adjacent VCUs, will remain unchanged. The acreage of the mapped SIA meets the qualifications of a medium OGR and allow it to function as a medium OGR on Suemez Island.

### **Alternative 3 (Draft EIS Preferred Alternative)**

This alternative emphasizes economic timber harvest within the constraints of the Forest Plan standard and guidelines. Timber volume is maximized to the extent that a reasonable economic timber harvest can be achieved. Alternative 3 emphasizes using cable and shovel yarding methods, deferring harvest areas that required expensive road construction, and deferring helicopter units that have long yarding distances to landings.

Alternative 3 would provide up to 25 MMBF of timber from approximately 1,376 acres. Within this area, approximately 1,024 acres will be harvested. This alternative would build about 5 miles of temporary roads and 7 miles of NFS Road. About 250 feet of this road would be built across University of Alaska land to access Unit 634-004. All newly constructed roads would be placed in storage or decommissioned. About 11 miles of existing NFS road also would be placed in storage or decommissioned with this alternative. Approximately 10 miles of existing NFS road would remain open.

Alternative 3 modifies the small old-growth reserves to meet Forest Plan standards and guidelines as recommended by the interagency biologists (see also Chapter 3, Other Resources Analyses):

- The OGR in VCU 6330 would be expanded to the west (to the existing road) to include an adequate amount of POG and make the OGR more circular.
- The OGR in VCU 6340 would be moved from south of Port Santa Cruz to the north side of Port Santa Cruz to include important winter deer habitat, a large contiguous block of old-growth within this watershed, and to and provide for a better distribution of OGRs.
- Expand the OGR in VCU 6350 to the west and south by adding a wildlife corridor and incorporating the four known goshawk nest buffers to meet the required acreage.
- The Forest Plan mapped Special Interest Area (SIA), which includes all of VCU 6360 and portions of other adjacent VCUs, will remain unchanged. The acreage of the mapped SIA meets the qualifications of a medium OGR and allow it to function as a medium OGR on Suemez Island.
- Increase the reserve acres in VCU 6370 on the east and west sides to include important winter deer range and to meet acreage recommendations.

### **Alternative 4**

Alternative 4 was created to address cumulative effects in Dolores Watershed. The Interdisciplinary Team (IDT) modified units and



## Summary

roads in the Dolores Watershed to minimize the risk of sedimentation in Alternative 4.

Alternative 4 was modified in this Final EIS in response to public comments on the Draft EIS about environmental and economic concerns; in this Final EIS, the helicopter portion of Unit 634-005, and all of Units 634-044, 634-045, 634-046, and 634-047 were removed from the Draft EIS Alternative 4.

Alternative 4 would provide up to 17 MMBF of timber from approximately 1,059 acres. Within this area, approximately 760 acres will be harvested. This alternative would build about 3 miles of temporary roads and 4 miles of NFS Road. All newly constructed roads would be placed in storage or decommissioned. About 11 miles of existing NFS road also would be placed in storage or decommissioned with this alternative. Approximately 10 miles of existing NFS road would remain open.

Alternative 4 modifies the small old-growth reserves as recommended by the interagency biologists.

### **Alternative 5**

This alternative addresses the Roadless Area and unroaded issue. All timber harvest and road construction proposed in Roadless Area 502 and unroaded areas in the Proposed Action were dropped to create this alternative.

Alternative 5 would provide up to 20 MMBF of timber from approximately 1,030 acres. Within this area, approximately 784 acres will be harvested. This alternative would build about 4 miles of temporary roads and 5 miles of NFS Road outside of the roadless areas. About 250 feet of this road would be built across University of Alaska land to access Unit 634-004. All newly constructed roads would be placed in storage or decommissioned. About 11 miles of existing NFS road also would be placed in storage or decommissioned with this alternative. Approximately 10 miles of existing NFS road would remain open.

Alternative 5 modifies the small old-growth reserves as recommended by the interagency biologists.

### **Design Criteria Common to All Action Alternatives**

All alternatives, including the Proposed Action, are consistent with the Forest Plan. All applicable Forest Plan standards and guidelines have been incorporated into the design of the proposed units and alternatives. Additional direction comes from applicable laws and Forest Service manuals and handbooks. Site-specific descriptions and resource considerations for each potential harvest unit are included on unit cards in the Scratchings project record. Design elements for the reconstruction and maintenance needed for existing NFS road and new

roads are described in detail in road cards in the Scratchings project record. The design elements required from the Forest Plan and common to all alternatives are listed in Chapter 2 of the Final EIS.

### **Comparison of Alternatives**

The following tables focus on how each alternative responds to each significant issue. The existing condition will change over time for some resources even if no proposed activities are implemented. Tables S-1 and S-2 compare alternatives in terms of the proposed activities and their effects on the resources analyzed. Please refer to Chapter 3 for additional discussion of the significant issues and other environmental considerations.

**Table S-1. Scratchings Timber Sale Proposed Activities by Alternative<sup>1</sup>**

<b>Proposed Activity</b>	<b>Alternative</b>				
	<b>Alt. 1</b>	<b>Alt. 2</b>	<b>Alt. 3</b>	<b>Alt. 4</b>	<b>Alt. 5</b>
<b>Acres of Harvest Treatment</b>					
<b>Even-aged Management</b>					
Clearcut	0	1,216	791	522	651
Deferred areas within harvest units <sup>2</sup>	0	277	310	258	206
<b>Two-aged Management</b>					
Clearcut with Reserves	0	349	234	238	132
Deferred areas within harvest units	0	77	41	41	41
<b>Total Harvested Acres</b>	0	1,565	1,024	760	784
<b>Total Deferred Acres within Units</b>	0	354	352	299	246
<b>Total Unit Acres</b>	0	1,919	1,376	1,059	1,030
	<b>Alt. 1</b>	<b>Alt. 2</b>	<b>Alt. 3</b>	<b>Alt. 4</b>	<b>Alt. 5</b>
<b>Acres of Timber Harvest by Logging System</b>					
Cable	0	726	551	361	443
Shovel	0	212	212	167	212
Helicopter	0	627	261	232	129
	<b>Alt. 1</b>	<b>Alt. 2</b>	<b>Alt. 3</b>	<b>Alt. 4</b>	<b>Alt. 5</b>
<b>Road Activities</b>					
Miles of new temporary road construction <sup>3</sup>	0	7	5	3	4
Miles of new National Forest System (NFS) road construction <sup>3</sup>	0	12	7	4	5
Miles of existing NFS road to be stored or decommissioned	0	11	11	11	11
Miles of open NFS road after storage activities	22	10	10	10	10

<sup>1</sup>Definitions of terms used in this table are explained in Chapter 4 under the Glossary section. Numbers in this table may not sum to totals shown due to rounding.

<sup>2</sup>Deferred areas are for soils, windfirmness, uneconomical timber, and scenery

<sup>3</sup>All newly constructed NFS roads will be put into storage (maintenance level 1) and all temporary roads will be decommissioned.

**Table S-2. Comparison of Scratchings Timber Sale Alternatives by Effects<sup>1</sup>**

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
<b>Issue 1 – Timber Harvest Economics</b>					
Total volume in MMBF	0	36	25	17	20
Total Volume in CCF	0	82,014	53,738	38,400	44,174
Logging costs per CCF	0	\$189.92	\$166.87	\$165.00	\$155.58
Indicated Bid-dollars per CCF	0	\$12.72	\$28.34	\$21.36	\$36.84
Current market value (direct income)	0	\$9.6 M	\$6.3 M	\$4.5 M	\$5.2 M
Number of direct jobs supported	0	210	138	98	115
<b>Issue 2 - Cumulative Impacts in the Dolores Watershed from Road Building and Timber Harvest (numbers below are in the Dolores Watershed)</b>					
Acres of timber harvest	327	753	616	469	616
Miles of road (including NFS and Temporary Roads)	5	10	10	6	9
(Total) Number of stream crossings	7	37	36	13	32
Percent of watershed harvested (within last 30 years)	15%	35%	29%	22%	29%
<b>Issue 3 - Timber Harvest and Road Construction in Roadless Areas and Unroaded Areas</b>					
Acres of timber harvest in Inventoried Roadless Area (IRA) 502	0	698	156	44	0
Acres of timber harvest in Unroaded	0	79	79	79	0
Miles of new road construction in IRA502	0	5	2	0	0
Miles of new road construction in Unroaded	0	0.4	0.3	0.3	0
Acres of IRA 502 retaining roadless characteristics	24,356	21,832	23,670	24,195	24,295
Acres of unroaded area retaining unroaded characteristics	2,606	2,077	2,076	2,076	2,430
<b>Effects on Other Resources</b>					
<b>Effects on Biodiversity</b>					
Deer Density (deer/mile <sup>2</sup> ) <sup>2</sup>	37	37	37	37	37
Acres of high value deer habitat remaining after harvest	7,298	6,875	6,952	7,071	7,012
Coarse canopy acres remaining after harvest	1,935	1,740	1,849	1,855	1,849
POG acres remaining	21,386	19,907	20,431	20,682	20,649
<b>Effects on Old-Growth Habitat Fragmentation</b>					
Interior POG acres	11,712	9,296	10,201	10,307 <sup>3</sup>	10,565
Habitat Patch #1 (1954=10,813 acres)	9,538	7,696	8,228	8,412 <sup>3</sup>	8,578
Habitat Patch #2 (1954 =11,131 acres)	10,959	10,959	10,959	10,959	10,959



## Summary

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Effects on Threatened and Endangered Species	None	None	None	None	None
Effects on Timber and Vegetation					
Proposed gross harvest acres by existing condition wind risk					
High Wind Risk	0	819	629	488	571
Moderate Wind Risk	0	470	252	192	159
Low Wind Risk	0	630	495	379	300
Effects on Watershed and Fisheries					
Number of New Fish Stream Crossings	0 <sup>4</sup>	11	5	1	4
# of Watersheds Exceeding 20% Cumulative Harvest Acres (in the last 30 years)	1	7	5	5	3
Effects to Soils					
Cumulative Acres of Detrimental Soil Disturbances (deferrals excluded)	130	216	189	175	177
Total Acres of Slopes Greater than 72% in Proposed Harvest Units (deferrals excluded)	0	44	39	27	28
Effects to Wetlands					
Acres of Proposed Harvest on Forested Wetlands	0	849	537	495	440
Cumulative Acres of NFS and Temporary Road on Wetlands	136	194	176	164	164
Effects to Transportation					
Miles of open road for OHV or high clearance vehicles	22	10	10	10	10
Miles of stored road allowing OHV use	0	4	4	4	4
Effects on Subsistence	Significant possibility of significant restrictions based on the Forest Plan’s predicted cumulative effects for subsistence hunting for deer is possible in some areas of the Tongass. See subsistence section of Chapter 3 for actual impacts on Suemez Island.				
Effects to Scenery					
Forest Plan VQO achieved for the seen area	Yes	Yes	Yes	Yes	Yes
Effects on Recreation	None	None	None	None	None
Effects on Heritage Resources	No Adverse	No Adverse	No Adverse	No Adverse	No Adverse

<sup>1</sup> Numbers may not sum to totals shown due to rounding

<sup>2</sup> Deer density calculations are based on HSI scores and not population surveys.

<sup>3</sup> Numbers not rerun for Final EIS Alt. 4 - acres remaining will be greater than those shown here. See Old growth and Fragmentation section of Chapter 3.

<sup>4</sup> There are 34 existing fish stream crossings.



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# **Chapter 1**

## **Purpose and Need**

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## Introduction

This chapter discusses the background of the Scratchings Timber Sale project and tiers to the 1997 Tongass National Forest Land and Resource Management Plan, as amended (Forest Plan). This chapter also includes the steps taken to identify environmental effects and public concerns related to implementation of the project. The Scratchings Timber Sale project is located on Suemez Island in Southeastern Alaska on the Craig Ranger District, Tongass National Forest, Alaska Region (Region 10), of the Forest Service, U.S. Department of Agriculture (see Vicinity Map, Figure 1-1). Suemez Island is located west of Prince of Wales Island and 12 miles southwest of Craig, Alaska.

## Description of the Project Area

The project area consists of approximately 37,127 acres within Value Comparison Units (VCUs) 6330, 6340, 6350, 6360, and 6370 (see Figure 2-1), which is the entire Suemez Island. Suemez Island is located east of Bucareli Bay and west of Ulloa Channel and Meares Passage. The project area includes a Special Interest Area, largely located in VCU 6360 in the southern portion of Suemez Island.

Timber harvest and associated road building in the Scratchings Timber Sale project area occurred mostly during the 1980s and 1990s through a combination of independent timber sales and an offering for the Long-term Timber Sale Contract with Ketchikan Pulp Company. All wood harvested was taken to the log transfer facility (LTF) in Port Refugio. Approximately 1,460 acres were harvested and 37 miles of roads (including temporary roads) were built.

## Proposed Action

A “proposed action” is defined early in the project-level planning process to briefly describe the project’s actions and magnitude. The proposed action serves as a starting point for the environmental analysis, and gives the public and other agencies specific information on which to focus comments. Alternative 2 is the Proposed Action in this Environmental Impact Statement (EIS).

The proposed action for the Scratchings Timber Sale project includes timber harvest and the development of an access management plan. The proposed timber harvest is planned to begin in 2007 and would provide for timber sale opportunities resulting in the production of up to 36 million board feet (MMBF) of timber from approximately 1,919 acres. Within this area, approximately 1,565 acres would be harvested. A mix of ground-based and helicopter logging systems would be used. Logs would be transported to the Port Refugio LTF for shipping by barge or log raft, see Figure 2-2.



# Scratchings Final EIS Vicinity Map

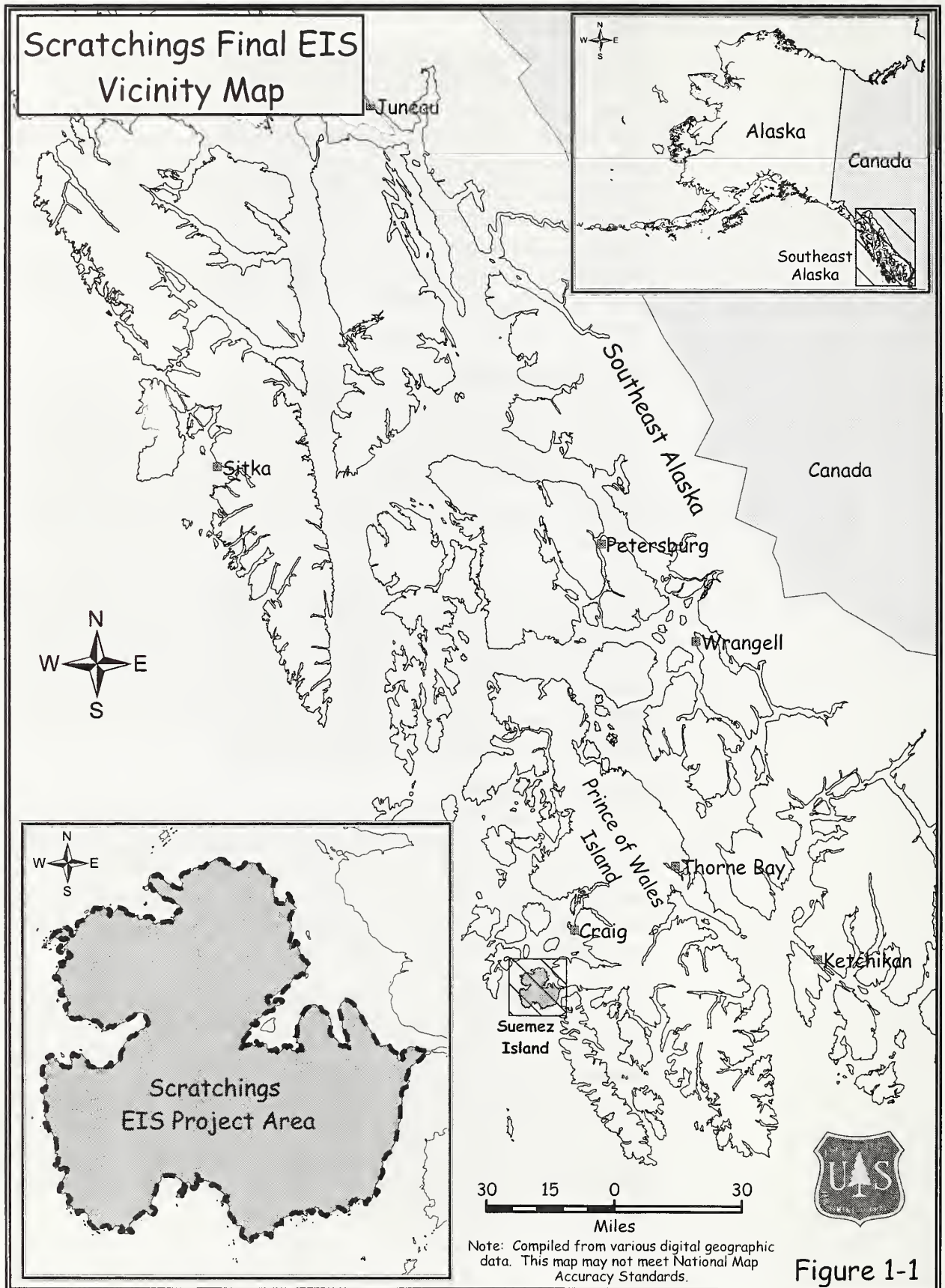


Figure 1-1



The Proposed Action would build about 7 miles of temporary roads and 12 miles of National Forest System (NFS) road; all newly constructed roads would be placed in storage or decommissioned. About 11 miles of existing NFS road would be placed in storage or decommissioned after timber harvest.

The Proposed Action modifies the project area small old-growth reserves (OGRs) to meet the minimum Forest Plan standards and guidelines (see Figure 2-2). Productive old-growth would be added to the north portion of the OGR in VCU 6330 and to the south portion of the OGR in VCU 6350. The northeast tip of the old-growth reserve in VCU 6340 would be dropped because the current OGR exceeds the size recommendation. The Special Interest Area, located in the southern third of the project area, is functioning as a medium OGR and would not be modified.

The Proposed Action and the other alternatives are discussed in detail in Chapter 2.

## **Purpose and Need**

The Scratchings Timber Sale project is proposed at this time to respond to goals and objectives of the Forest Plan, and to help move the project area toward desired conditions described in that plan. The Forest Plan includes forest-wide goals and objectives. Land Use Designations (LUDs) identify area-specific goals, objectives, and desired conditions. Applicable forest-wide goals and objectives found in the Forest Plan (pages 2-3 and 2-4) include:

- “Manage the timber resource for production of sawtimber and other wood products from suitable timber lands made available for timber harvest, on an even-flow, long-term sustained yield basis and in an economically efficient manner.”
- “Seek to provide a timber supply sufficient to meet the annual market demand for Tongass National Forest timber, and the market demand for the planning cycle.”
- “Provide a diversity of opportunities for resource uses that contribute to the local and regional economies of Southeast Alaska.”

Appendix A of this document provides information on how this project relates to the overall Tongass timber sale program, and why the project is being scheduled at this time.

## **Decisions to be Made**

The Forest Supervisor will decide whether and how to implement activities within the Scratchings Timber Sale project area in accordance with Forest Plan goals, objectives, and desired conditions. The decision may include the following:

# 1 Purpose and Need

- the location, amount, and method of timber harvest, road construction, log transfer facilities, and silvicultural practices;
- road management objectives;
- any necessary project-specific design criteria, mitigation measures, and monitoring requirements;
- significant restrictions on subsistence uses; and
- changes in Small Old-growth Habitat Reserves, approved as a non-significant amendment to the Forest Plan.

## **Management Direction**

The Scratchings Timber Sale Final Environmental Impact Statement (Final EIS) is a project-level analysis. The scope of this document is confined to addressing the significant issues and possible environmental consequences of the project. This Final EIS does implement direction provided and tiers to the Forest Plan Final EIS and Forest Plan Supplemental EIS where appropriate.

## **Relationship to the Forest Plan**

Chapter 2 of the Forest Plan discusses the Forest-wide multiple use goals and objectives for the Tongass National Forest. The concept of multiple-use is applied at the Forest level. Not every acre or every management prescription will achieve all goals for all resources. The goals are reached at the Forest level by providing a mosaic of land and resource conditions based on the 19 Land Use Designations described in Chapter 3 of the Forest Plan. Chapter 4 of the Forest Plan contains the standards and guidelines that guide the protection or management of each resource.

Standards and guidelines were defined for resources and documented in Chapter 4 of the Forest Plan. Standards and guidelines were designed so that all activities are integrated to meet land allocation objectives. Many of the standards and guidelines applicable to the activities proposed in the Scratchings Timber Sale project are listed in Chapters 2 and 3, and on the unit and road cards.

## **Forest Plan Land Use Designations**

The Forest Plan uses management prescriptions or Land Use Designations (LUDs) to focus the management of the National Forest System lands within different areas of the Tongass National Forest. Each LUD provides for a combination of goals and objectives, activities, practices, and uses. Chapter 3 of the Forest Plan contains a detailed description of each LUD. The Scratchings Timber Sale project area includes four of these LUDs : Timber Production, Modified Landscape, Special Interest Area, and Old-growth Habitat. There are no other LUDs present on Suemez Island. Approximately 3 percent of the project area is non-National Forest System Land. Goals, objectives and desired conditions of each are summarized below. The locations of

each LUD on Suemez Island, including the Scratchings Timber Sale project, are shown on Figure 1-2.

## **Timber Production LUD**

Suitable timber lands managed within Timber Production LUDs are managed for the production of sawtimber and other wood products on an even-flow, long-term sustained yield basis (Forest Plan, page 3-144). The forested areas are healthy stands with a balanced mix of age classes. An extensive road system is developed for accessing timber as well as recreation, hunting, fishing, and other public and administrative uses. Roads may be restricted, either seasonally or year-round, to address resource and other needs. Management activities will usually dominate most visible areas. A variety of wildlife habitats, predominately in the early and middle successional stages, are present. Approximately 24 percent of the land in the project area is allocated to the Timber Production LUD (Table 1-1).

## **Modified Landscape LUD**

Forest visitors, recreationists, and others using popular travel routes and use areas will view a somewhat modified landscape in areas managed within Modified Landscape LUDs (Forest Plan, pages 3-135 and 3-136). Timber harvest units are typically small and affect only a small percentage of areas that are seen within the visual foreground. Management activities may dominate the landscape in the middle and background areas. Roads, facilities, and other structures are also subordinate to the foreground landscape. Recreation opportunities associated with natural-appearing to modified settings are available. A yield of timber is produced which contributes to Forest-wide sustained yield. Approximately 35 percent of the land in the project area is allocated to the Modified Landscape LUD (Table 1-1).

## **Special Interest Area LUD**

Special Interest Areas on the Tongass National Forest contain generally unchanged environments in which unique natural features are preserved (Forest Plan, pages 3-56 and 3-57). Areas with unique cultural, geological, botanical, zoological, recreational, scenic, or other special features are included. These areas remain largely undisturbed.

The Special Interest Area on Suemez Island is classified as a Geologic Area. A volcanic formation on the southwest side of the island rises to include the highest point on the island, a possible volcanic vent at 2,145 feet elevation. The formation descends seaward in the form of cliffs and scree slopes and terminates at Cape Felix. Volcanic and obsidian flows are present. Dramatic basalt columns; the high energy rock coastline of Cape Felix; and fine sand beaches in Arena Cove make this an outstanding scenic area. No harvest would occur in the Special Interest Area. Approximately 26 percent of the land in the project area is allocated to the Special Interest Area LUD (Table 1-1).



# 1 Purpose and Need

## Old-growth Habitat LUD

Forested areas within Old-growth Habitat LUDs have attained old-growth forest characteristics (Forest Plan, page 3-76). Timber harvest is generally not permitted, and development of roads and other facilities is discouraged, except when compatible with Old-growth Habitat management objectives.

Some of the objectives of this LUD are to provide old-growth forest habitats in combination with other LUDs; maintain viable populations of native and desired non-native fish and wildlife species that may be closely associated with old-growth forests; contribute to the habitat capability of fish and wildlife resources to support sustainable human subsistence and recreational uses; and maintain biological diversity components and ecological processes associated with old-growth forests. Approximately 12 percent of the land in the project area is allocated to the Old-growth Habitat LUD (Table 1-1).

**Table 1-1. Forest Plan Land Use Designations (LUDs) on Suemez Island**

Land Use Designation	Acres*	Percent
<b>Non-development LUDs</b>		
Special Interest Area	9,666	26%
Old-growth Habitat	4,373	12%
<b>Development LUDs</b>		
Modified Landscape	13,078	35%
Timber Production	8,844	24%
Non-National Forest System Land	1,167	3%

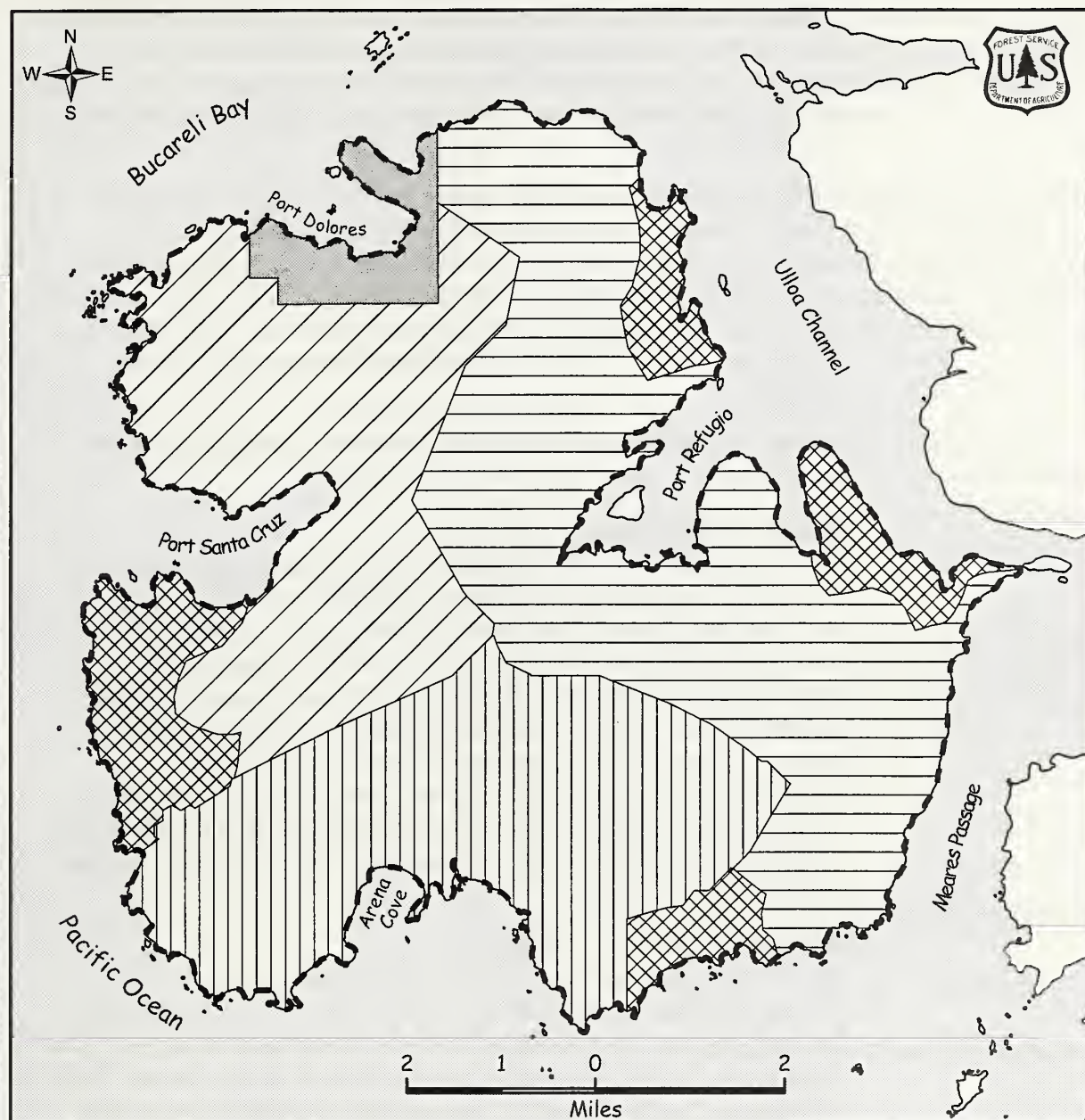
\*Totals may not match totals in other places in this EIS due to rounding

The Forest Plan includes resource-specific standards and guidelines in addition to LUDs. Some areas are not available for programmed timber harvest within LUDs that are otherwise available because of Forest Plan standards and guidelines. Other standards and guidelines relate to other restrictions such as timing and intensity of management. All Forest Plan standards and guidelines will be met. Chapters 2 and 3 provide a more complete discussion of project-specific standards and guidelines.

## Non-National Forest System Lands


The University of Alaska has selected the 1,167-acre parcel in the northwest corner of Suemez Island that was previously owned by the State of Alaska. Approximately 100 acres was harvested in the mid 1950s. The University of Alaska Lands Administrator was contacted in May of 2005 to see what their future plans were for the property. Currently, the University of Alaska does not have any plans for the next 3-5 years (S. Connelly, University of Alaska, pers. comm.).

# 1997 Forest Plan Land Use Designation





 Project Boundary

 Saltwater

 University of Alaska Land

 Timber Production LUD

 Modified Landscape LUD

 Old Growth Habitat LUD (OGR)

 Special Interest Area LUD

Note: This map is compiled from various digital geographic data and may not meet National Map Accuracy Standards.

Figure 1-2

# 1 Purpose and Need

## **Tongass National Forest Five-year Timber Sale Plan**

The Tongass National Forest Five-year Timber Sale Plan is adjusted annually based on the most current information about timber demand, availability, and legislation. The plan is designed to allow time to complete the environmental analysis and sale layout prior to the timber being offered, usually two to four years depending on the complexity of the project.

Timber may be offered for harvest in one sale or multiple sales of various sizes in the near future if the decision is made to harvest timber in the Scratchings Timber Sale project area. The most recent update (January 30, 2007) lists the Scratchings Timber Sale project as planned for two offerings, one of them in fiscal year 2007. The number and volume of the timber sales will depend on the final decision.

No other timber sale activities are planned on Suemez Island in the next 5 years.

## **Public Involvement**

Public involvement is a key component of the planning process. The Council on Environmental Quality (CEQ) defines scoping as “...an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action” (40 CFR 1501.7). Among other things, the scoping process is used to invite public participation; help identify public issues; and obtain public comment at various stages of the environmental analysis process. Scoping begins early and continues until a decision is made. The following paragraphs describe the public involvement activities that have occurred for the Scratchings Timber Sale project.

## **Schedule of Proposed Actions**

The Tongass National Forest Schedule of Proposed Actions is published quarterly to inform the public of the status of all projects that may undergo environmental analysis during the coming year. The Scratchings Timber Sale project was first placed on the January, 2001 Schedule of Proposed Actions. This schedule is mailed to everyone who requests it, and is available at Ranger District offices and on the Tongass National Forest website ([www.fs.fed.us/r10/tongass](http://www.fs.fed.us/r10/tongass)). The schedule provides contact information for each project. Those who are interested may request more information or ask to be added to the project mailing list of their choice.

## **Mailing List**

A Craig/Thorne Bay project mailing list was used for the July 7, 2005 scoping letter. This list included people who have requested to be on the mailing list; those who previously expressed interest in timber sale proposals; and those who either own property or conduct business



within or near the project area. The mailing list also includes many local, state, and federal agencies and federally recognized tribal governments with whom the Forest Service routinely consults during project planning for the Craig and Thorne Bay Ranger Districts. The mailing list is frequently updated to accommodate requests for additions, deletions, and mailing address updates.

## **Open House**

An open house that presented information on the Scratchings Timber Sale project was held July 28, 2005 at the Craig Ranger District conference room. This open house provided information on the project and provided an opportunity for the public to voice any concerns or preferences they might have about management activities in the project area.

## **Subsistence Hearings**

Subsistence hearings were held in Craig on July 19, 2006 and Hydraburg on July 20, 2006. No oral testimony was received at these hearings. A single written comment received from the Hydraburg hearing stated that the Scratchings project was too large of a sale.

## **Public Scoping Documents**

A scoping letter identifying the project and requesting information on site-specific concerns was mailed to 450 people on the project mailing list July 7, 2005. The Craig Ranger District received 35 responses to this mailing. Several concerns were identified, including:

- economic viability of timber sales;
- validity of market demand;
- benefit to local employment;
- impact to subsistence use;
- impacts of road building on water quality, sediment delivery to streams, and wildlife;
- impacts to Suemez Roadless Area (Inventoried Roadless Area 502);
- contribution to cumulative environmental impacts;
- impacts to small mammals;
- validity of deer model;
- modification to small old growth reserves; and
- cultural resources.

Three issues were considered significant and within the scope of the project decision: timber harvest economics, cumulative impacts in the Dolores Watershed from road building and timber harvest, and timber harvest and road construction in the roadless and unroaded areas (see Significant Issues, this chapter).

# 1 Purpose and Need

## **Analysis of Comments**

Comments were received from individuals, organizations, state agencies, and other federal agencies. Each comment received during scoping was considered a potential issue, and was evaluated to determine in which of the following ways the comment was resolved or addressed:

- Resolved by Forest Plan Land Use Designation
- Addressed through implementation of Forest Plan standards and guidelines and Best Management Practices
- Addressed through implementation of project-specific mitigation measures
- Addressed during processes or analyses routinely conducted by the Interdisciplinary Team (IDT)
- Addressed through selection of units during alternative design
- Used to develop or partially develop an alternative
- Beyond the scope of the project

## **Notice of Intent**

A Notice of Intent to Prepare an Environmental Impact Statement was published in the *Federal Register* on July 6, 2005 (Volume 70, Number 128). This notice briefly described the proposed action and the Purpose and Need for the project. Estimated timelines for the project were given, along with a background summary, and contact information for those interested in participating in the planning process.

## **Consultation with Other Government Agencies**

The Forest Service is committed to working closely with other agencies at all stages of planning. The agency is responsible for coordinating reviews of the project by several other agencies. Reviews are required in some cases because other agencies have authority to issue permits for certain proposed activities. Reviews allow interaction with other agencies with responsibilities for certain environmental conditions, for example clean water or healthy wildlife populations. This interagency cooperation helps identify the means to avoid or mitigate possible harmful environmental effects. An ongoing professional dialogue is maintained with cooperating agencies throughout the planning process.

The following state and federal agencies have been consulted about this project: U.S. Fish and Wildlife Service; National Marine Fisheries Service; Alaska Department of Fish and Game; Alaska Department of Natural Resources; and State Historic Preservation Office.

## **Consultation with Federally Recognized Tribal Governments**

The National Historic Preservation Act (1966 as amended) strengthens the relationship between the Forest Service and Indian Tribes (defined



as federally recognized tribes, Alaska Native Corporations and Native Hawaiian Organizations) in consultation regarding site significance and the potential affects on historic and archaeological sites. Executive Orders 13084 and 13175 require that federal agencies consult with tribes during planning activities. Letters providing information and inviting government-to-government consultation were sent to tribes in May 2005 prior to public scoping for the Scratchings EIS. These letters were sent to the following federally recognized tribes and Alaska Native corporations: Klawock Cooperative Association; Klawock Heenya Corporation; Craig Community Association; Shaan Seet Inc.; Hydaburg Cooperative Association; Haida Corporation; the Organized Village of Kasaan; Kivilco Inc.; Ketchikan Indian Community; the Central Council of Tlingit and Haida Indian Tribes of Alaska; and Sealaska Corporation. The letters were followed by telephone calls to all federally recognized tribal governments on Prince of Wales Island. No comments or responses to these letters were received.

The Craig District Ranger or acting District Ranger attended tribal council meetings on Prince of Wales Island in October 2005 to highlight high interest projects on the Craig and Thorne Bay Ranger Districts and to review the 2006 program of work. The Scratchings Timber Sale project was highlighted and concerns were solicited. On September 26, 2006 a meeting was held in Craig between the Tongass National Forest and representatives of the Craig, Klawock, and Hydaburg Tribal Councils. The focus of that meeting was the Tongass Forest Plan Adjustment. However, the Scratchings Timber Sale project was discussed as well.

During the late winter and spring of 2006 the Prince of Wales Island District Rangers or acting Rangers attended tribal council meetings to highlight the year's active projects. The Scratchings Timber Sale project was discussed at each of these meetings. Meetings were held in February, March, and April 2006 in Hydaburg, Klawock, and Craig. No comments regarding Scratchings planning were received at these meetings.

Following distribution of the Scratchings Draft EIS in August 2006, additional tribal consultation was conducted. A comment letter was received from the Craig Community Association, which led to modification to the Heritage Resources section of chapter 3 in the Final EIS. Letters presenting the 2007 program of work for the Craig and Thorne Bay Ranger Districts were mailed to tribes in mid December 2006. During January 2007 the Craig District Ranger or acting Ranger attended tribal council meetings in Hydaburg, Klawock, and Craig. The Scratchings Timber Sale project was discussed and the timeline for completion explained. No comments were received at these meetings.

# 1 Purpose and Need

## Draft EIS

### **Availability of the Draft EIS for Public Comment**

The Notice of Availability of this Draft EIS was published in the *Federal Register* on August 4, 2006, starting the 45-day public comment period. A legal notice was published in the *Juneau Empire*, the official newspaper of record, and in the *Ketchikan Daily News* on August 4, 2006. A legal notice was published in the *Island News* on August 7, 2006. The Draft EIS was mailed to everyone on the project mailing list as well as others who requested a copy. The Draft EIS was also available at the Craig Ranger District and in public libraries throughout Southeast Alaska.

### **Comments on the Draft Environmental Impact Statement**

Written comments from individuals, public agencies, and private organizations were received during the Draft EIS comment period. Appendix B of this Final EIS includes copies of letters received on the Draft EIS and Forest Service responses to comments in those letters. The IDT used the comments received on the Draft EIS to refine and develop this Final EIS, including a modification of Alternative 4.

## Final EIS/Record of Decision

### **Publication of the Final Environmental Impact Statement and Record of Decision**

The Notice of Availability of this Final EIS will be published in the *Federal Register*. Legal notices will be published in the *Juneau Empire*, the official newspaper of record, and in the *Ketchikan Daily News*; and the *Island News*. The Legal Notice in the *Juneau Empire* starts the 45-day appeal filing period on the Record of Decision. Copies of the Final EIS and Record of Decision will be mailed to Federal and State agencies, federally recognized tribal governments, public libraries throughout Southeast Alaska, and to those who requested copies of the Final EIS or who responded to the Draft EIS. The Final EIS will also be available at the Craig Ranger District Office.

### **Significant Issues**

Significant issues are used to formulate and design alternatives, prescribe mitigation measures and analyze significant effects. Significant issues for the Scratchings Timber Sale project were identified through public and internal scoping. Similar issues were combined where appropriate. Issues can arise from a variety of sources, including:

- issues, concerns, and opportunities identified in the Forest Plan;
- issues identified for similar projects (past actions);
- current internal issues;
- changes in public uses, attitudes, values, or perceptions;
- issues raised by the public during scoping; and
- comments from other government agencies.

Measures of the significance of an issue are based on the extent of the geographic distribution; duration of the related effects; intensity of interest; or resource conflict surrounding the issue. An issue's significance may not necessarily relate to the number of people who have raised the concern. An issue is considered significant at the project level when it is relevant to the specific project, and can be appropriately addressed at the project level. Some issues have already been resolved through national direction or analyzed at the Forest Plan level.

Units of measure are developed once a significant issue is identified to analyze how each alternative responds to the concern. Measures are chosen that are quantitative where possible; predictable; responsive to the issue; and linked to cause and effect relationships. These measures describe how the alternative affects the resource or resources at the heart of the issue. Mitigation of the anticipated environmental effects of the project is also designed to be responsive to significant issues.

Some issues can be addressed the same way in all alternatives, for example applying stream buffers in accordance with Forest Plan standards and guidelines. These measures are described in Chapters 2 and 3.

Three issues were determined to be significant and within the scope of the Scratchings Timber Sale project decision. These issues are addressed through the proposed action and the alternatives.

## **Issue 1 – Timber Harvest Economics**

Comments indicated people are concerned about economically viable timber sales and the impact of timber harvest on the livelihoods of residents of Southeast Alaska. Alternative 3 was designed to address this issue.

### **Units of Measure**

- Total volume in million board feet (MMBF)
- Total volume in hundred cubic feet (CCF)
- Logging costs per CCF
- Indicated bid - dollars per CCF
- Current market value (direct income)
- Number of direct jobs supported



# 1 Purpose and Need

## **Issue 2- Cumulative Impacts in the Dolores Watershed from Road Building and Timber Harvest**

Some members of the Scratchings IDT were concerned about past management activities that occurred in this watershed. Alternative 4 was developed to address those concerns and modified in the Final EIS based on additional comments.

### **Units of Measure**

#### **Within Dolores Watershed within the last 30 years:**

- Acres of timber harvest
- Miles of road
- Number of stream crossings
- Percent of watershed harvested

## **Issue 3 - Timber Harvest and Road Construction in Roadless Areas and Unroaded Areas**

Comments indicated no timber harvest should occur in roadless areas due to the Court of Appeals ruling in Natural Resources Defense Council vs. USDA Forest Service. Alternative 5 was developed to address this concern.

### **Units of Measure**

- Acres of timber harvest in Inventoried Roadless Area 502 and in unroaded areas
- Miles of new road construction in Inventoried Roadless Area 502 and in unroaded areas
- Acres of Inventoried Roadless Area 502 retaining roadless characteristics
- Acres of unroaded area retaining unroaded character

## **Other Environmental Considerations**

Many comments received during the public scoping process were concerns/issues that are not considered significant because they are addressed at the Forest Plan level, or are not significantly affected due to the application of Forest Plan standards and guidelines. Environmental considerations for these issues are also discussed briefly in Chapter 3.

## **Issues Beyond the Scope of this Final EIS**

Some comments received during scoping are not specific to the project or concern decisions that are made at a higher level of planning. These comments are paraphrased and addressed below.



**Issue-All of Suemez Island should be designated a Special Interest Area**

Response: Land Use Designations were allocated with the 1997 Forest Plan decision, which determined that parts of this island would better meet the Forest Plan objectives as Development LUDs. The Forest Plan Amendment Draft EIS does propose an adjustment to the location of this Special Interest Area.

**Issue-Due to the recent 9th Circuit Court of Appeal decision in NRDC v. USFS, the USFS should not be planning any large sales and in particular, not in Roadless Areas**

Response: The process of remedying the shortcomings identified by the Ninth Circuit court of appeals is in progress with a Forest Plan Amendment DEIS released in January 2007. The current revised Forest Plan allows for the activities in Scratchings to take place. Delaying planning and analysis regarding road building and timber harvest, even for a short time period, have a significant effect on the amount of timber available for sale in the next year, due to the time needed for sale preparation, appraisal and advertisement, and to provide for the time period when sale areas are typically inaccessible (winter months). Delayed project analyses affect other projects 'in-line' for consideration, creating impacts to the entire sale program several years into the future and diminishes the Forest Service's ability to respond to the on-going timber demand since these analyses are time-consuming. The Tongass National Forest will continue to be managed in compliance with Section 101 of the Tongass Timber Reform Act (TTRA). Clearing the Scratchings Timber Sale project through the NEPA process helps meet the Alaska Region's obligations with regards to Section 101 of the TTRA. In addition, the Scratchings Timber Sale project includes consideration of two alternatives (Alternatives 1 and 5) that do not harvest or build roads in the inventoried roadless area, and two alternatives with substantially less effects to roadless than the Proposed Action. The Scratchings Timber Sale decision will be reviewed for consistency with the decision on the Forest Plan amendment following the procedures in the Forest Service handbook FSH 1909.15, section 18. Any portions of this project will be adjusted as necessary to be consistent with the management direction in that decision.

**Issue-We should not be exporting logs, even if local mills can't afford to pay as much.**

Response: Export permits are requested by the purchaser and are require approval by the Regional Forester.

# 1 Purpose and Need

**Issue-The effect of the project on deer should be analyzed using population modeling of the deer/wolf community and should run on volume class not volume strata. This will require a new version of the model.**

Response: The deer/wolf community model has not completed a peer review process. Tongass National Forest direction is to use the current deer model to determine if the action alternatives will meet the 18 deer per square mile threshold to maintain sufficient animals for wolves and hunters (Person et al. 1997, Puchlerz 2002 and Cole 2005).

**Issue-Opposed to all timber harvest**

Response: The National Forest Management Act (1976) determined that timber production was an appropriate use of National Forest System lands. This act allows for timber production on lands deemed suitable as described by the act and where the Forest Plan has allowed this use.

**Issue-Develop action alternatives that offer only micro-sales**

Response: Due to the isolated road system of Suemez Island, numerous micro-sales are not a practical method to best manage the timber resources in the Scratchings project area.

## **State and Federal Agency Review**

### **Coastal Zone Management Act (CZMA) of 1972**

Under the CZMA, Federal activities that affect any land or water use or any natural resource of a State's coastal zone must be carried out in a manner that is consistent to the maximum extent practicable with the enforceable policies of the State's coastal management plan. The Forest Service made a determination that the Scratchings Timber Sale project will affect the coastal zone, and will be carried out in a manner that is consistent to the maximum extent practicable with the enforceable policies of the Alaska Coastal Management Program. The Office of Project Management and Permitting of the Alaska Department of Natural Resources reviewed and concurred with that determination.

### **Alaska Forest Resources and Practices Act**

The Alaska Forest Resources and Practices Act (1993) may affect National Forest management through its relationship to the Alaska Coastal Management Program and the Federal Coastal Zone Management Act.

This Act is the standard used for evaluating timber harvest activities on federal lands for purposes of determining consistency to the maximum extent practicable with the Alaska Coastal Management Program. The Act recognizes that consistency is attainable for timber

harvest on federal land using procedures different from those required by the Act or its implementing regulations.

A review by the Alaska Department of Environmental Conservation has determined that the Best Management Practices (BMP) contained in the Alaska Region Soil and Water Conservation Handbook meet or exceed the BMPs contained in the Alaska Forest Resources and Practices Act and regulations (Brown 1997).

### **Magnuson-Stevens Fishery Conservation Act**

The Magnuson-Stevens Fishery Conservation Act (1996) requires that all federal agencies consult with the National Marine Fisheries Service (NMFS) when any project “may adversely affect” essential fish habitat. The Forest Service sent a copy of the Draft EIS to the NMFS which formally started the consultation process. The NMFS has reviewed the Draft EIS and provided comments on the findings of the assessment and made five conservation recommendations pertaining to the project in a letter dated August 25, 2006 (see project record for letter). The Forest Service has responded to the conservation recommendations made by the NMFS. These responses can be found in the Response to Comments section (Appendix B) of this Final EIS. The original EFH Assessment is included in Chapter 3 of this Final EIS to help the reader better understand the consultation process.

### **National Historic Preservation Act (Section 106)**

The Alaska State Historic Preservation Office (SHPO) reviews compliance with Section 106 of the National Historic Preservation Act, a process that established concurrence with a determination of effects on historic properties in the area of potential effects. SHPO has concurred with a determination of no adverse effect for this project in a letter dated May 16, 2006.

### **Federal and State Permits, Licenses, and Certifications**

Various permits from other federal and state agencies may be required to proceed with the activities proposed in this Final EIS. In addition, the Forest Service would obtain permission from the University of Alaska to build road on University land prior to implementation of any actions requiring this road.

The following permits have been or will be obtained.

### **U.S. Army Corps of Engineers**

Section 404 of the Clean Water Act (1977, as amended) requires a permit from the Corps of Engineers before filling or dredging in wetlands and tidelands. Section 10 of the Rivers and Harbors Act of 1899 requires Corps of Engineers approval for the construction of structures or work in navigable waters of the United States. This applies to the existing Port Rufugio LTF, for which a permit has been



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obtained. All proposed roads for this project meet the criteria for a silvicultural exemption from permits required by Section 404.

## **U.S. Environmental Protection Agency**

A Storm Water Discharge Permit (Section 402 of the Clean Water Act) will be obtained.

National Pollutant Discharge Elimination (Section 402 of the Clean Water Act) will be obtained.

## **State of Alaska, Department of Natural Resources**

Use of the Port Refugio LTF requires authorization for occupancy and use of tidelands and submerged lands from the Alaska Department of Natural Resources. This permit will be obtained.

## **State of Alaska, Department of Environmental Conservation**

A Certification of Compliance with Alaska Water Quality Standards (Section 401 Certification) will be obtained for the Port Refugio LTF.

## **Applicable Laws and Executive Orders**

This section includes a partial list of federal laws and executive orders pertaining to project-specific planning and environmental analysis on federal lands.

- Organic Administration Act of 1897 (as amended)
- Rivers and Harbors Act of 1899
- Migratory Bird Treaty Act of 1918 (as amended)
- Multiple-use Sustained Yield Act of 1960
- National Historic Preservation Act of 1966 (as amended)
- Wild and Scenic Rivers Act of 1968, amended 1986
- National Environmental Policy Act (NEPA) of 1969 (as amended)
- Clean Air Act of 1970 (as amended)
- Alaska Native Claims Settlement Act (ANCSA) of 1971
- Marine Mammal Protection Act of 1972
- Endangered Species Act (ESA) of 1973 (as amended)
- Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974 (as amended)
- National Forest Management Act (NFMA) of 1976 (as amended)
- Clean Water Act of 1977 (as amended)
- Coastal Zone Management Act (CZMA) of 1972 (as amended)
- American Indian Religious Freedom Act of 1978
- Alaska National Interest Lands Conservation Act (ANILCA) of 1980
- Archeological Resource Protection Act of 1980
- Cave Resource Protection Act of 1988



- Native American Graves Protection and Repatriation Act (1990)
- Tongass Timber Reform Act (TTRA) of 1990
- Magnuson-Stevens Fishery Conservation and Management Act
- Executive Order 11593 (cultural resources)
- Executive Order 11988 (floodplains)
- Executive Order 11990 (wetlands)
- Executive Order 12898 (environmental justice)
- Executive Order 12962 (aquatic systems and recreational fisheries)
- Executive Order 13007 (American Indian Sacred Sites)
- Executive Order 13084 (Consultation and Coordination with Indian Tribal Governments)
- Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments)
- Executive Order 13186 (Migratory Bird Treaty)

# 1 Purpose and Need



Looking south from Port Refugio; the area seen in this photo would not be harvested in any Scratchings Timber Sale alternative.

# **Chapter 2**

## **Alternatives**

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## Introduction

This chapter describes and compares the alternatives considered by the Forest Service for the Scratchings Timber Sale project to meet the Purpose and Need and respond to the significant issues as described in Chapter 1. The following topics are discussed:

- The development of the Proposed Action and alternatives
- A description and map of each alternative considered in detail
- An overview of design elements
- A comparison of these alternatives focusing on the evaluation criteria for the significant issues
- Alternatives eliminated from detailed study
- Mitigation measures and monitoring

Chapter 2 presents the alternatives and compares them to provide a basis for a decision by the responsible official (40 CFR 1502.14) and to inform the public and other agencies. Please refer to Chapter 3 "Affected Environment and Environmental Effects" for the full analysis of alternatives.

## Proposed Action and Alternative Development

A Logging System and Transportation Analysis (LSTA) was developed to include suitable and available commercial forest land as identified by the National Forest Management Act and the 1997 Tongass Land and Resource Management Plan, as amended (Forest Plan). Potential timber harvest units were identified from that LSTA. These units were field-reviewed to ensure their suitability; to identify any concerns; and to determine which silvicultural prescriptions would be feasible. Units were adjusted if necessary.

Five alternatives were developed including the Proposed Action and a No-action alternative in response to the significant issues and comments received during scoping. Development of the alternatives led to deferring many potential timber harvest units from further consideration at this time. The usual reasons for deferring or dropping units include the presence of unsuitable soils and slopes; relocation of small old-growth reserves; timber volume of less than 8,000 board feet per acre; adjacency with other units; or to increase financial efficiency.

## Changes Between Draft EIS and Final EIS

Changes made between the Draft and Final Environmental Impact Statements (EIS) reflect results of additional analyses in consideration of public comments and more fieldwork. The analyses in the Final EIS were made using current data. Alternative 4 was modified to respond to concerns raised by public comment on the Draft EIS. Please see the description and analysis of Alternative 4 in Chapters 2 and 3 of this Final EIS.

## 2 Alternatives

Forest Service personnel conducted additional field surveys on Sumez Island during the summer and fall of 2006. Results of their additional field surveys are included as addenda to the resource reports in the project record. Results of the field surveys include: updated streams data and nest check data for goshawk; modified silvicultural prescriptions, logging systems, and proposed road locations; and updated landslide, unsuitable soils, and slopes greater than 72% locations and landslide risk assessment. Chapters 1, 2, and 3, have been updated in this Final EIS.

Unit cards and road cards were also updated between Draft and Final EIS to address specific public comments on areas dropped from harvest, silvicultural prescriptions, and temporary road locations. Modifications were made to silvicultural prescriptions and temporary road locations in some units. The Record of Decision (ROD) would include unit and road cards for the selected alternative. Other updated unit and road cards are located in the project record.

The following list summarizes and explains the changes made between Draft and Final EIS.

### Chapter 1

- Adjusted the proposed action description to match the minor modifications made to the Proposed Action.
- Replaced the description of the interagency biologist old-growth recommendations under the Proposed Action with the Forest Plan minimum OGR design as analyzed in the Draft EIS and Final EIS.

### Chapter 2

- Alternative 4 was modified to respond to concerns raised by public comment on the Draft EIS.
- The section “Alternatives Considered but Eliminated” was updated to respond to comments received on the Draft EIS.
- Replaced Figure 2-2, the Proposed Action map in the Draft EIS, with a new Figure 2-2 that displays the Forest Plan minimum OGR design as analyzed in the Draft EIS and Final EIS.
- Adjustments of the unit design and road locations were made to Alternatives 2, 3, and 5 as a result of additional fieldwork. Changes to the alternatives included:
  - Yarding system acreages and deferral acreages changed.
  - Predominantly low wind risk helicopter yarding areas were changed from even-age clearcutting to two-age partial cutting.

- Road locations were adjusted to GPS survey locations and unit designs.
- The boundary of the OGR in VCU 6330 was moved to an existing road which decreased the total size by approximately 20 acres (of which 1 acre was POG).

### Chapter 3

- Information was added as a result of additional analysis and to respond to public comments including:
  - reasonably foreseeable activities;
  - Issue 1-Timber Economics;
  - Issue 2 (roadless)-evaluation of additional roadless characteristics;
  - wildlife information, specifically goshawk, endemic mammals, deer model information, habitat connectivity and island biogeography, high value deer winter range within OGRs, and deer densities by WAA;
  - road density by alternative;
  - windthrow risk;
  - landslide frequency analysis;
  - information on Mini Watershed;
  - additional stream crossings that were identified in the field;
  - Geier risk, transport potential index (TPI) and storage potential index (SPI) information;
  - recreation carrying capacity;
  - heritage information; and
  - geology and karst information.
- Results of the updated NEAT runs are more positive in the Final EIS. The differences are attributable to several factors that vary by alternative. Those factors include:
  - Reduced road costs-Draft EIS road costs included the purchase of new modular bridges while the Final EIS appraised for the use of government furnished, used, modular bridges moved to the sale from other locations.
  - More efficient logging systems-Helicopter yarding areas changed from clearcutting to partial cutting (24" minimum dbh limit) where silviculturally approved. This reduced the number, and associated logging costs, of low value, small diameter trees that would have to be cut and removed by helicopter.



## 2 Alternatives

### Appendices

- Appendices B (Unit Cards), C (Road Cards), D (Mitigation Measures), E (Units No Longer Under Consideration), and F (Best Management Practices) were not reprinted with the Final EIS. Updated unit and road cards are available, and are located in the Scratchings project record. The information in Appendices D and F did not change between Draft and Final EIS, is discussed in Chapter 3, is listed on the unit and road cards, and is available in the Forest Plan. The information in Appendix E did not change between Draft and Final EIS. All information from these appendices is available in the Scratchings project record.

### Alternatives Considered In Detail

The No-action Alternative (Alternative 1, Figure 2-1), and four action alternatives were considered in detail. Figures 2-2 through 2-5 display the alternatives considered in detail. Table 2-1 compares the proposed activities and effects of the alternatives.

Minor modifications were made to Alternatives 2, 3, and 5 between the Draft and Final EIS to reflect results of additional fieldwork. Alternative 4 was modified to respond to concerns raised by public comment on the Draft EIS and to reflect results of additional fieldwork. Please see the descriptions below.

#### Alternative 1 - The No-action Alternative

The analysis of this alternative represents the existing condition of the Scratchings Timber Sale project area (see Figure 2-1). Approximately 22 miles of National Forest System (NFS) road would remain open. No additional road storage or decommissioning would take place.

The effect of not harvesting timber or building roads in the project area at this time are analyzed under this alternative. This alternative would respond to the issues of watershed, roadless areas, scenic quality, recreation value, wildlife habitat protection, and old-growth forests by not building roads or harvesting timber. This alternative would not respond to the issue of providing employment and economic benefits to the local community. This alternative would not contribute sawtimber or other wood products to help meet the annual demand for Tongass National Forest timber. Small old-growth reserves (OGRs) located in VCUs 6330, 6350, and 6370 would remain as mapped in the Forest Plan and would not meet either the total size or the productive old-growth (POG) criteria as listed in Appendix K of the Forest Plan.



The small OGR in VCU 6340 (that meets both total and POG acre requirements) and the Special Interest Area that acts as a medium OGR in VCU 6360 would remain the same. Future timber harvest or other activities in the project area may be considered.

### **Alternative 2 – Proposed Action**

This alternative emphasizes timber production in the project area while meeting Forest Plan standards and guidelines. Alternative 2 would construct more than two miles of road across University of Alaska land needed to access Timber Production LUDs south of Port Dolores.

Alternative 2 would provide up to 36 million board feet (MMBF) of timber from approximately 1,919 acres. Within this area, approximately 1,565 acres will be harvested. This alternative would build about 7 miles of temporary roads and 12 miles of National Forest System (NFS) road (see Figure 2-2). More than two miles of this road would be built across University of Alaska land. All newly constructed roads would be placed in storage or decommissioned. About 11 miles of existing NFS road also would be placed in storage or decommissioned with this alternative. Approximately 10 miles of existing NFS road would remain open.

Alternative 2 modifies the project area small old-growth reserves (OGRs) to meet the minimum Forest Plan standards and guidelines (see Figure 2-2):

- Productive old growth (POG) would be added to the north portion of the OGR in VCU 6330
- The northeast tip of the old-growth reserve in VCU 6340 would be dropped because the current OGR exceeds the size recommendation.
- POG would be added to the south portion of the OGR in VCU 6350.
- Increase the reserve acres in VCU 6370 on the east side to include more important winter deer range and to meet acreage recommendations.
- The Forest Plan mapped Special Interest Area (SIA), which includes all of VCU 6360 and portions of other adjacent VCUs, will remain unchanged. The acreage of the mapped SIA meets the qualifications of a medium OGR and allow it to function as a medium OGR on Suemez Island.

### **Alternative 3 (Draft EIS Preferred Alternative)**

This alternative emphasizes economic timber harvest within the constraints of the Forest Plan standard and guidelines. Timber volume is maximized to the extent that a reasonable economic timber harvest can be achieved. Alternative 3 emphasizes using cable and shovel

## 2 Alternatives

yarding methods, deferring harvest areas that required expensive road construction, and deferring helicopter units that have long yarding distances to landings.

Alternative 3 would provide up to 25 MMBF of timber from approximately 1,376 acres. Within this area, approximately 1,024 acres will be harvested. This alternative would build about 5 miles of temporary roads and 7 miles of NFS Road (see Figure 2-3). About 250 feet of this road would be built across University of Alaska land to access Unit 634-004. All newly constructed roads would be placed in storage or decommissioned. About 11 miles of existing NFS road also would be placed in storage or decommissioned with this alternative. Approximately 10 miles of existing NFS road would remain open.

Alternative 3 modifies the small old-growth reserves to meet Forest Plan standards and guidelines as recommended by the interagency biologists (see also Chapter 3, Other Resources Analyses):

- The OGR in VCU 6330 would be expanded to the west (to the existing road) to include an adequate amount of POG and make the OGR more circular.
- The OGR in VCU 6340 would be moved from south of Port Santa Cruz to the north side of Port Santa Cruz to include important winter deer habitat, a large contiguous block of old-growth within this watershed, and to and provide for a better distribution of OGRs.
- Expand the OGR in VCU 6350 to the west and south by adding a wildlife corridor and incorporating the four known goshawk nest buffers to meet the required acreage.
- The Forest Plan mapped Special Interest Area (SIA), which includes all of VCU 6360 and portions of other adjacent VCUs, will remain unchanged. The acreage of the mapped SIA meets the qualifications of a medium OGR and allow it to function as a medium OGR on Suemez Island.
- Increase the reserve acres in VCU 6370 on the east and west sides to include important winter deer range and to meet acreage recommendations.

### **Alternative 4**

Alternative 4 was created to address cumulative effects in Dolores Watershed. The Dolores Watershed is characterized by areas of steep slopes greater than 60 percent gradient, a high percentage of high mass movement soils, and productive salmon streams. Landslides have occurred from road failures and previously harvested areas. The Interdisciplinary Team (IDT) modified units and roads in the Dolores Watershed to minimize the risk of sedimentation in Alternative 4.

In Alternative 4, less road construction than in the other action alternatives would reduce sedimentation risk by using helicopter yarding instead of ground-based systems, and some portions of harvest units proposed in other alternatives were dropped.

Alternative 4 was modified in this Final EIS in response to public comments on the Draft EIS about environmental and economic concerns; in this Final EIS, the helicopter portion of Unit 634-005, and all of Units 634-044, 634-045, 634-046, and 634-047 were removed from the Draft EIS Alternative 4 (see Figure 2-4).

Alternative 4 would provide up to 17 MMBF of timber from approximately 1,059 acres. Within this area, approximately 760 acres will be harvested. This alternative would build about 3 miles of temporary roads and 4 miles of NFS Road. All newly constructed roads would be placed in storage or decommissioned. About 11 miles of existing NFS road also would be placed in storage or decommissioned with this alternative. Approximately 10 miles of existing NFS road would remain open.

Alternative 4 modifies the small old-growth reserves as recommended by the interagency biologists (see Alternative 3 description).

### **Alternative 5**

This alternative addresses the Roadless Area and unroaded issue. All timber harvest and road construction proposed in Roadless Area 502 and unroaded areas in the Proposed Action were dropped to create this alternative (see Figure 2-5).

Alternative 5 would provide up to 20 MMBF of timber from approximately 1,030 acres. Within this area, approximately 784 acres will be harvested. This alternative would build about 4 miles of temporary roads and 5 miles of NFS Road outside of the roadless areas. About 250 feet of this road would be built across University of Alaska land to access Unit 634-004. All newly constructed roads would be placed in storage or decommissioned. About 11 miles of existing NFS road also would be placed in storage or decommissioned with this alternative. Approximately 10 miles of existing NFS road would remain open.

Alternative 5 modifies the small old-growth reserves as recommended by the interagency biologists (see Alternative 3 description).

### **Design Criteria Common to All Action Alternatives**

All alternatives, including the Proposed Action, are consistent with the Forest Plan. All applicable Forest Plan standards and guidelines have



## 2 Alternatives

been incorporated into the design of the proposed units and alternatives. Additional direction comes from applicable laws and Forest Service manuals and handbooks. Site-specific descriptions and resource considerations for each potential harvest unit are included on unit cards in the Scratchings project record. Design elements for the reconstruction and maintenance needed for existing NFS road and new roads are described in detail in road cards in the Scratchings project record. The design elements required from the Forest Plan and common to all alternatives are listed below. The following design criteria are in alphabetical order.

### **Beach and Estuary Fringe**

Beach and estuary fringe extend 1,000 feet inland from mean high tide along all marine coastlines. The Forest Plan classifies the beach and estuary fringe as unsuitable for planned commercial timber harvest (Forest Plan pages 4-5). No timber harvest or new roads are proposed in beach or estuary fringe.

### **Biodiversity**

The Small Old-growth Habitat Reserves in VCU 6330, 6340, 6350 and 6370 have been evaluated for size, spacing, and habitat composition. Options for the reserves were created, and alternatives were designed to accommodate these options.

### **Cave and Karst Resources**

No road-reconstruction is proposed for the section of NFS Road #1080000 near the junction of NFS Roads #1086000 and #108000 which the “losing stream” (stream that goes underground into karst system) flows under; only normal routing maintenance is proposed. Other proposed activities avoid karst features through buffering

### **Fish Habitat and Water Quality**

Forest Plan standards and guidelines for riparian areas are applied to all fish streams, and to non-fish-bearing Class III and Class IV streams within the Scratchings Timber Sale project area. These areas are delineated according to the process group direction in the Forest-wide Riparian standards and guidelines. This protection exceeds the requirements of the Tongass Timber Reform Act (TTRA), which mandates at least a 100-foot buffer zone where no commercial timber harvest can occur on each side of all Class I streams and on those Class II streams which flow directly into Class I streams. Best Management Practices would be implemented to minimize the risk of affecting stream water quality. These include timing restrictions for in-stream activities, and site-specific design of stream-crossing structures. Any activities that occur on NFS roads are addressed on the road cards in the Scratchings project record.



The road cards show the timing restrictions for in-stream activities, such as the replacement of bridges. Timing windows for in-stream work for roads and/or replacement of bridges would be determined through coordination with the Alaska Department of Natural Resources.

All Best Management Practices (BMPs) would be incorporated during sale design and harvest administration. A National Pollutant Discharge Elimination System permit will be obtained. This permit provides for protection of water quality by eliminating discharge of surface water directly from the working area to the environment through the use of settling ponds and a drainage system.

Operators who maintain storage facilities for oil or oil products on the sale area would be required to take appropriate preventive measures to ensure that spills do not occur. Action would be taken using emergency response materials to prevent petroleum products from entering any stream or other waters if a spill did occur. The timber sale purchaser would be required to prepare and maintain a Spill Prevention, Control and Countermeasures (SPCC) Plan that meets applicable Environmental Protection Agency (EPA) requirements. Timber sale administrators would inspect petroleum storage facilities and the Purchaser's SPCC Plan for prevention of spills and to ensure that required emergency response plans are in place.

## **Heritage Resources**

Archaeologists conducted a review of existing historic and archaeological data. Past archaeological survey results were reviewed. Local tribal governments were consulted. Additional archaeological survey was conducted in the high sensitivity areas and in areas of lower sensitivity to test the forest predictive model. No new historic or archaeological sites were identified. All known sites are located outside of areas of direct effect. In all alternatives indirect and cumulative effects are considered insignificant. The Forest Service has made a determination of no adverse effect and received concurrence from the State Historic Preservation Officer (SHPO).

Activities would cease if previously undiscovered historic properties are found during implementation. Mitigation measures would be developed by the Forest Service in consultation with the SHPO. Activities would resume once mitigation measures are approved and implemented.

## **Log Transfer Facility (LTF), Sort Yard, and Logging Camp**

The existing permitted LTF at Port Refugio would be used to transport logs by saltwater to a processing facility. An existing log storage area

## 2 Alternatives

located near the LTF on the uplands would be used if necessary. Logging camp facilities are anticipated to be located on floating barges. Some facilities related to the logging camp activities may be land-based; the contractor would need to obtain all required permits.

### **Scenery**

Proposed harvest units have been designed or harvest treatments have been prescribed that would meet Visual Quality Objectives (VQO) adopted in the Forest Plan for the applicable land use designation.

### **Soils**

Soil resource reconnaissance identified about 755 acres in and immediately adjacent to the unit pool that do not meet Forest Plan standards and guidelines for timber harvest related to soils; about 362 of these acres are on slopes greater than 72 percent gradient. Harvest unit reconnaissance also identified 44 acres of slopes greater than 72 percent that remain in the unit pool because they are stable, and rate below Mass Movement Index (MMI) 4. Table 3SL-4 in Chapter 3 of this Final EIS displays the areas of proposed timber harvest on slopes greater than 72 percent gradient by harvest unit and alternative. Design criteria for harvest units on steep slopes are listed on unit cards (in the Scratchings project record). All harvest units are designed to meet Region 10 Soil Quality Standards.

### **Special Interest Area**

The proposed activities avoid the Special Interest Area as described in the 1997 Forest Plan.

### **Subsistence**

All alternatives have been evaluated in compliance with ANILCA, Title VIII, Section 810. See the Subsistence section in Chapter 3.

### **Threatened, Endangered and Sensitive Species**

The purpose of this assessment is to determine whether the proposed activities are likely to affect a species that has been listed or proposed as an endangered or threatened species. Consultation with the U.S. Fish and Wildlife Service (USFWS) has verified that no threatened or endangered terrestrial species are known to occur in or near the Scratchings Timber Sale project area. Consultation with the National Marine Fisheries Service (NMFS) has been done concerning threatened and endangered marine species; they concurred with our finding of no effect. A Biological Assessment/Biological Evaluation has been completed for this Final EIS.

A biological evaluation for all sensitive wildlife and plant species potentially inhabiting the project area has been completed. The Forest

Plan contains standards and guidelines for designated wildlife sensitive species, and they are incorporated into the project as applicable.

Goshawk nest surveys have been conducted repeatedly on Suemez Island since 1989. No active nests have been located since 1996, although some birds have been sighted. No goshawks were sighted in 2005 or 2006.

Forest Plan standards and guidelines specify a buffer of not less than 100 acres of POG around any goshawk nest tree or probable nest site. Known nesting areas would be protected following Forest Plan protocols. All applicable Forest Plan standards and guidelines would be applied to any new nests that are discovered.

### **Wetlands**

All roads would be located to avoid wetlands to the extent practicable. Where wetlands cannot be avoided, design criteria to minimize impacts to wetlands have been prescribed (see road cards in the Scratchings project record). Wetland avoidance is discussed in Chapter 3, Wetlands.

### **Wildlife Habitat**

The Forest Plan Old-growth Habitat Conservation Strategy is considered sufficient to maintain habitat for viable populations for all species potentially within the project area, including small endemic terrestrial mammals. This strategy includes all species specific standards and guidelines.

No openings over 100 acres in size would be created where even-aged management has been determined to be the best silvicultural prescription to meet the objectives of the alternative and Forest Plan management prescription. Forest Plan standards and guidelines would be applied if any raptor or great blue heron nests are found during layout of harvest units.

### **Windthrow**

Risks of windthrow have been evaluated for the project area. Stand edges created by timber harvest have been evaluated for risk of windthrow; protection measures have been incorporated into the silvicultural prescriptions. The unit edges at risk of windthrow will be further reviewed during layout.

Riparian Management Areas (RMAs) with concerns for watershed stream channel stability and windthrow potential have been identified and will have trees retained in Reasonable Assurance of Windfirmness (RAW) buffers. The size and configuration of the RAW buffer will be determined during unit layout by an interdisciplinary team as



## 2 Alternatives

identified in the unit cards. In some cases RAW has been accomplished through unit design or silviculture prescription.



Forest Service boat in Port Dolores; the land surrounding Port Dolores is owned by the University of Alaska.





# Scratchings Final EIS Alternative 1 (Existing Condition)

- Project Boundary
- Saltwater
- Lakes
- VCU Boundary
- 1997 Forest Plan  
Old Growth Habitat LUD
- University of Alaska Lands
- Previous Harvest
- Volume Strata - High
- Volume Strata - Medium
- Volume Strata - Low
- Inventoried Roadless Area 502
- Unroaded Area
- Existing NFS & Private Roads
- Log Transfer Facility



1 0.5 0 1  
Miles

Note: This map is compiled from various digital geographic data and may not meet National Map Accuracy Standards.

Figure 2-1

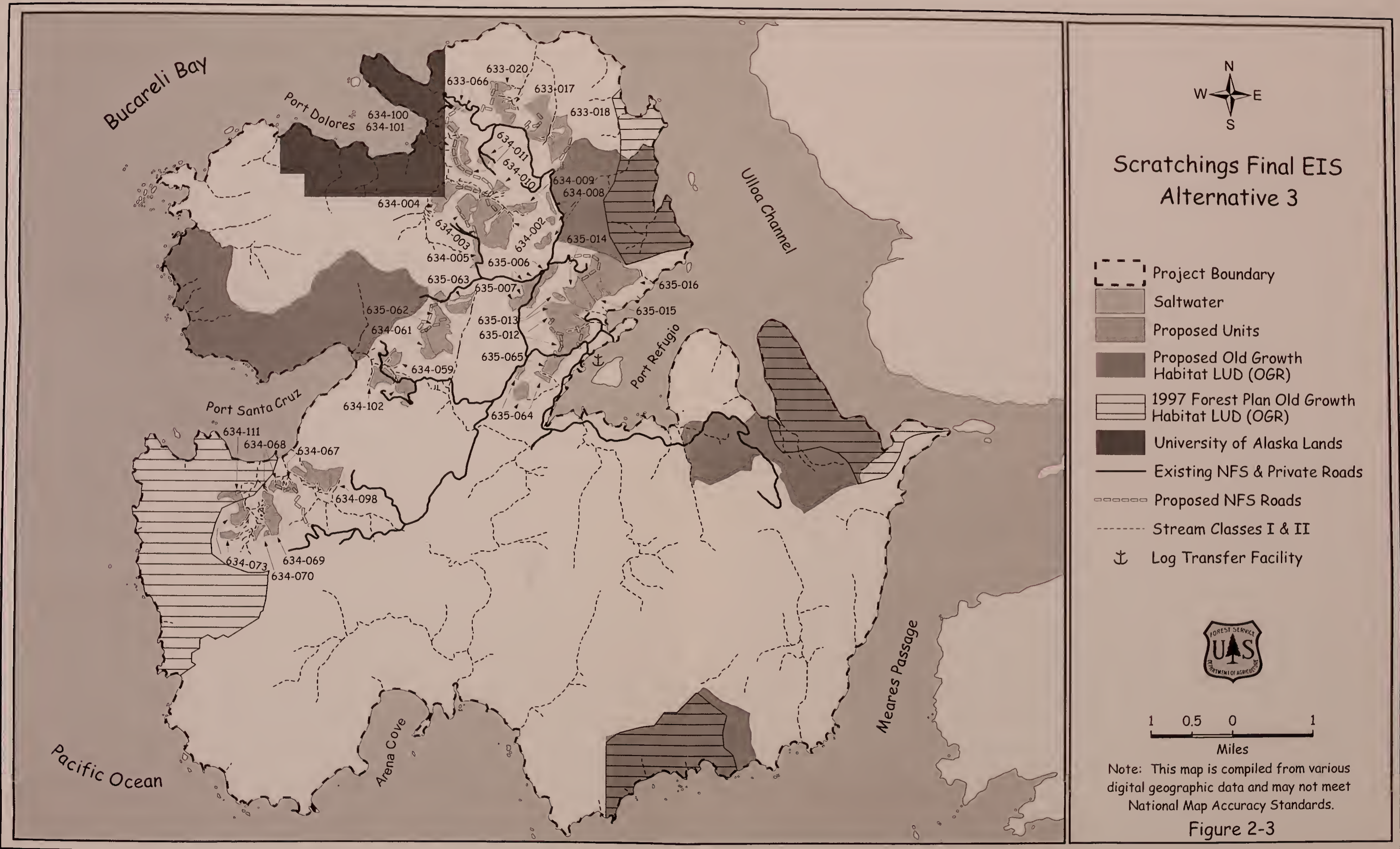


















## Scratchings Final EIS Alternative 4

- Project Boundary
- Saltwater
- Proposed Units
- Proposed Old Growth Habitat LUD (OGR)
- 1997 Forest Plan Old Growth Habitat LUD (OGR)
- University of Alaska Lands
- Existing NFS & Private Roads
- Proposed NFS Roads
- Stream Classes I & II
- Log Transfer Facility



1 0.5 0 1  
Miles

Note: This map is compiled from various digital geographic data and may not meet National Map Accuracy Standards.

Figure 2-4









### **Identification of the Preferred Alternative**

Alternative 3 was identified as the preferred alternative in the Draft EIS. The Responsible Official may select this alternative, another alternative, or a modification of one of the alternatives.

### **Comparison of Alternatives**

The following tables focus on how each alternative responds to each significant issue. The existing condition will change over time for some resources even if no proposed activities are implemented.

Tables 2-1 and 2-2 compare alternatives in terms of the proposed activities and their effects on the resources analyzed. Please refer to Chapter 3 for additional discussion of the significant issues and other environmental considerations.

## 2 Alternatives

**Table 2-1. Scratchings Timber Sale Proposed Activities by Alternative<sup>1</sup>**

Proposed Activity	Alternative				
	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
<b>Acres of Harvest Treatment</b>					
<b>Even-aged Management</b>					
Clearcut	0	1,216	791	522	651
Deferred areas within harvest units <sup>2</sup>	0	277	310	258	206
<b>Two-aged Management</b>					
Clearcut with Reserves	0	349	234	238	132
Deferred areas within harvest units	0	77	41	41	41
<b>Total Harvested Acres</b>	0	1,565	1,024	760	784
<b>Total Deferred Acres within Units</b>	0	354	352	299	246
<b>Total Unit Acres</b>	0	1,919	1,376	1,059	1,030
	<b>Alt. 1</b>	<b>Alt. 2</b>	<b>Alt. 3</b>	<b>Alt. 4</b>	<b>Alt. 5</b>
<b>Acres of Timber Harvest by Logging System</b>					
Cable	0	726	551	361	443
Shovel	0	212	212	167	212
Helicopter	0	627	261	232	129
	<b>Alt. 1</b>	<b>Alt. 2</b>	<b>Alt. 3</b>	<b>Alt. 4</b>	<b>Alt. 5</b>
<b>Road Activities</b>					
Miles of new temporary road construction <sup>3</sup>	0	7	5	3	4
Miles of new National Forest System (NFS) road construction <sup>3</sup>	0	12	7	4	5
Miles of existing NFS road to be stored or decommissioned	0	11	11	11	11
Miles of open NFS road after storage activities	22	10	10	10	10

<sup>1</sup>Definitions of terms used in this table are explained in Chapter 4 under the Glossary section. Numbers in this table may not sum to totals shown due to rounding.

<sup>2</sup>Deferred areas are for soils, windfirmness, uneconomical timber, and scenery

<sup>3</sup>All newly constructed NFS roads will be put into storage (maintenance level 1) and all temporary roads will be decommissioned.



**Table 2-2. Comparison of Scratchings Timber Sale Alternatives by Effects<sup>1</sup>**

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
<b>Issue 1 – Timber Harvest Economics</b>					
Total volume in MMBF	0	36	25	17	20
Total volume in CCF	0	82,014	53,738	38,400	44,174
Logging costs per CCF	0	\$189.92	\$166.87	\$165.00	\$155.58
Indicated bid-dollars per CCF	0	\$12.72	\$28.34	\$21.36	\$36.84
Current market value (direct income)	0	\$9.6 M	\$6.3 M	\$4.5 M	\$5.2 M
Number of direct jobs supported	0	210	138	98	115
<b>Issue 2 - Cumulative Impacts in the Dolores Watershed from Road Building and Timber Harvest (numbers below are in the Dolores Watershed)</b>					
Acres of timber harvest	327	753	616	469	616
Miles of road (including NFS and Temporary Roads)	5	10	10	6	9
(Total) Number of stream crossings	7	37	36	13	32
Percent of watershed harvested (within last 30 years)	15%	35%	29%	22%	29%
<b>Issue 3 - Timber Harvest and Road Construction in Roadless Areas and Unroaded Areas</b>					
Acres of timber harvest in Inventoried Roadless Area (IRA) 502	0	698	156	44	0
Acres of timber harvest in unroaded	0	79	79	79	0
Miles of new road construction in IRA502	0	5	2	0	0
Miles of new road construction in Unroaded	0	0.4	0.3	0.3	0
Acres of IRA 502 retaining roadless characteristics	24,356	21,832	23,670	24,195	24,295
Acres of unroaded area retaining unroaded characteristics	2,606	2,077	2,076	2,076	2,430
<b>Effects on Other Resources</b>					
<b>Effects on Biodiversity</b>					
Deer Density (deer/mile <sup>2</sup> ) <sup>2</sup>	37	37	37	37	37
Acres of high value deer habitat remaining after harvest	7,298	6,875	6,952	7,071	7,012
Coarse canopy acres remaining after harvest	1,935	1,740	1,849	1,855	1,849
POG acres remaining	21,386	19,907	20,431	20,682	20,649
<b>Effects on Old-Growth Habitat Fragmentation</b>					
Interior POG acres	11,712	9,296	10,201	10,307 <sup>3</sup>	10,565
Habitat Patch #1 (1954=10,813 acres)	9,538	7,696	8,228	8,412 <sup>3</sup>	8,578
Habitat Patch #2 (1954 =11,131 acres)	10,959	10,959	10,959	10,959	10,959

## 2 Alternatives

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Effects on Threatened and Endangered Species	None	None	None	None	None
Effects on Timber and Vegetation					
Proposed gross harvest acres by existing condition wind risk					
High Wind Risk	0	819	629	488	571
Moderate Wind Risk	0	470	252	192	159
Low Wind Risk	0	630	495	379	300
Effects on Watershed and Fisheries					
Number of New Fish Stream Crossings	0 <sup>4</sup>	11	5	1	4
Number of Watersheds Exceeding 20% Cumulative Harvest Acres (in the last 30 years)	1	7	5	5	3
Effects to Soils					
Cumulative Acres of Detrimental Soil Disturbances (deferrals excluded)	130	216	189	175	177
Total Acres of Slopes Greater than 72% in Proposed Harvest Units (deferrals excluded)	0	44	39	27	28
Effects to Wetlands					
Acres of Proposed Harvest on Forested Wetlands	0	849	537	495	440
Cumulative Acres of NFS and Temporary Road on Wetlands	136	194	176	164	164
Effects to Transportation					
Miles of open road for OHV or high clearance vehicles	22	10	10	10	10
Miles of stored road allowing OHV use	0	4	4	4	4
Effects on Subsistence	Significant possibility of significant restrictions based on the Forest Plan’s predicted cumulative effects for subsistence hunting for deer is possible in some areas of the Tongass. See subsistence section of Chapter 3 for actual impacts on Suemez Island.				
Effects to Scenery					
Forest Plan VQO achieved for the seen area	Yes	Yes	Yes	Yes	Yes
Effects on Recreation	None	None	None	None	None
Effects on Heritage Resources	No Adverse	No Adverse	No Adverse	No Adverse	No Adverse

<sup>1</sup> Numbers may not sum to totals shown due to rounding

<sup>2</sup> Deer density calculations are based on HSI scores and not population surveys.

<sup>3</sup> Numbers not rerun for Final EIS Alt. 4 - acres remaining will be greater than those shown here. See Old growth and Fragmentation section of Chapter 3.

<sup>4</sup> There are 34 existing fish stream crossings.

## Alternatives Considered but Eliminated From Detailed Study

Several alternatives were considered during the planning process, but have not been included in the Final EIS for detailed study. They are described briefly below, along with the reasons for not considering them further.

An alternative that harvested in all VCUs available for commercial timber harvest on Suemez Island was considered and received preliminary analysis in 1999. This included timber harvest units in southeast portion VCU 6350 and all of VCU 6370. These units were not included in the initial proposal because of poor economic values and multiple resource concerns.

An alternative that proposed harvesting timber without constructing any new roads received preliminary analysis. Approximately 1,011 acres could be harvested from the existing road system. About 280 of these acres could be cable yarded. The rest would be helicopter yarded to saltwater or to the existing road system. This alternative was not analyzed in detail due to the limited acreage available for cable yarding and the increased amount of helicopter yarding. The large amount of helicopter yarding would increase the cost considerably. This alternative would not be economically feasible. Additionally, this alternative would require yarding to salt water on the west side of Suemez Island (see alternative eliminated below).

An alternative that proposed harvesting units on the west side of Suemez Island with the timber hauled to a new LTF in Port Dolores was also considered. This alternative was not considered in detail because a suitable LTF site was not available due to conflict with meeting current LTF site criteria.

An alternative that harvested units by helicopter on the west side of Suemez Island and transported logs to a barge between Port Dolores and Port Santa Cruz was also considered. This alternative was not analyzed in detail because the area is exposed to the open ocean sea swell.

Public comments on the Draft EIS included recommendations that: no timber harvest should occur in the Dolores Watershed, specific Dolores Watershed units should be deferred from harvest, silvicultural prescription should be changed, and changes be made to temporary road locations. An alternative that did not include any timber harvest in the Dolores Watershed was considered but was not analyzed in detail since it would adversely affect project economics, and analysis



## 2 Alternatives

showed that timber harvest could be accomplished while meeting Forest Plan Standards and Guidelines.

An alternative that did not include timber harvest in the Dolores Watershed or in the Suemez Roadless Area (IRA 502) was considered but eliminated from detailed study. Such an alternative would not provide enough timber harvest volume to meet the purpose and need of the project. Additionally, fieldwork and analyses showed that timber harvest could occur in these areas and meet Forest Plan Standards and Guidelines.

An alternative that only included timber salvage harvest was considered but eliminated from detailed study because such a harvest would not provide for enough timber harvest volume to meet the purpose and need of the project.

### **Mitigation Measures**

The analysis documented in this Final EIS discloses the possible adverse effects that may occur from implementing the actions proposed under each alternative. Many of these effects are reduced or avoided using Forest Plan direction including management prescriptions; standards and guidelines; and Best Management Practices (BMPs) which meet the requirements of the Clean Water Act. Mitigation measures would be incorporated during project implementation.

If Units 634-111, 634-073, 634-070, 634-069, 634-068, 634-067, 634-098 are selected for harvest, archaeological surveys will be done in conjunction with road and harvest unit layout to identify potential obsidian quarry sites or tool manufacturing sites. If a significant historic property is located during this survey, road or unit development will cease at that location while a mitigation strategy is developed in consultation with SHPO. The mitigation strategy will depend on the extent and character of the historic property and may range from small scale data recovery to dropping the unit or road. SHPO has concurred with a determination of no adverse affect with the implementation of this mitigation strategy.

### **Monitoring**

Monitoring is gathering data and information and observing the results of management activities to provide a basis for evaluation. Monitoring activities can be divided into project-specific monitoring and Forest Plan monitoring. The National Forest Management Act requires national forests to monitor and evaluate their forest plans. Chapter 6 of the Forest Plan details the activities to be conducted as part of the Forest Plan implementation.



## Forest Plan Monitoring

Forest Plan monitoring is either based on management activities, such as those associated with this project, or are based on the condition of the Tongass National Forest as a whole. Much of the monitoring at the Forest Plan level consists of annually surveying a representative sample of harvest units or roads. Any implemented activities in the Scratchings Timber Sale project area could be incorporated as described in the *Monitoring and Evaluation Guidebook for the Tongass Land and Resource Management Plan* (USDA Forest Service 2000).

The three types of monitoring are:

- 1) **Implementation monitoring and evaluation**, designed to determine if the design criteria and Forest Plan standards and guidelines are being incorporated during on-the-ground operations. Contract preparation and contract administration for timber harvest or road construction are included.
- 2) **Effectiveness monitoring**, designed to determine how well specific design features used to meet Forest Plan standards and guidelines or mitigation measures work in protecting natural resources and their beneficial uses.
- 3) **Validation monitoring and evaluation**, used to examine whether the assumptions and predicted effects are accurate.

## Project-specific Monitoring

Implementation monitoring is conducted at the project level. Selected management activities need to be consistent with design criteria used to analyze the environmental effects during the planning stage. This ensures that the effects would not change from what was predicted. The effectiveness of design criteria is determined by Forest Plan level monitoring. Project activities are included as a representative sample during Forest-wide monitoring.

**Project Implementation Monitoring:** The Interdisciplinary Team prepared Unit and Road cards to provide site-specific analysis and guidance for unit layout and road location. The cards would be used during timber harvest and road construction. Unit cards include a unit map and a narrative explaining resource concerns and how the concerns could be addressed in the design of each unit. Road Management Objectives were developed for each road. These cards guide the implementation of those activities.

Timber sale contracts must be certified by the Line Officer that the timber sale contract is in agreement with the decision document. This certification verifies that items such as maps; number of acres; location

## 2 Alternatives

of units; harvest methods; and stand numbers agree. The certification also ensures that all mitigation measures identified in the Final EIS relating to timber sale contract requirements are included in the timber sale contract (FSH 2409.18).

Implementation monitoring continues through harvest and contract inspections. Sale administrators and road inspectors monitor harvest and construction activities as a routine part of project implementation. Contract administrators and inspectors ensure that the prescriptions contained on the unit and road cards are implemented through provisions contained in the timber sale contract or other contracts. Sale administrators and road contract inspectors have the authority to initiate action to repair resource damage and suspend operations until problems have been corrected. This process ensures that project elements and Forest Plan standards and guidelines are implemented as designed. Contract administrators monitor all units and roads for implementation of the appropriate Best Management Practices.

# **Chapter 3**

## **Affected Environment and Environmental Effects**

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## **Introduction**

This chapter provides information concerning the existing environment of the Scratchings Timber Sale project area, and potential consequences to the environment as a result of this project. This chapter also presents the scientific and analytical basis for the comparison of alternatives presented in Chapter 2. Each resource potentially affected by the proposed action or other alternatives is described by its current condition and uses. Other findings required by policy and law are included at the end of the chapter.

The chapter begins with a description of the environmental effects on resources associated with three significant issues in the Scratchings Timber Sale project. Concerns raised during scoping that are not significant issues are discussed in the Other Environmental Considerations section. These include potential effects (environmental consequences) that are addressed the same way in all alternatives or resources that are not significantly affected by any alternative. Direct, indirect and cumulative effects, are disclosed. Effects are quantified where possible, and qualitative discussions are also included. The means by which potential adverse effects will be reduced or mitigated are described in this chapter, as well as in Chapter 2 and unit and road cards (updated cards are in the Scratchings project record and if a decision is made to harvest trees, updated cards for units and roads in the decision will be attached to the Record of Decision).

The discussions of resources and potential effects use existing information included in the 1997 Tongass Land and Resource Plan, as amended (Forest Plan) and Forest Plan EIS; other project environmental analyses; project-specific resource reports; agency and scientific studies; and related information. Information is briefly summarized and referenced to minimize duplication where applicable. The planning record for the Scratchings Timber Sale project area includes all project-specific information including resource reports; documentation of field investigations; and information resulting from public involvement efforts. The planning record is located at the Craig Ranger District Office in Craig, Alaska, and is available for review during regular business hours. Information from the record is available upon request.

## **Ecological and Administrative Land Divisions**

Several different ways are used to describe the different resources of the Tongass National Forest. The following are some of the land divisions referred to in this analysis.

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#### **Land Use Designation**

The Forest Plan established 19 different Land Use Designations (LUDs) for National Forest System lands on the Tongass National Forest. Each LUD provides for a combination of activities; goals and objectives; and uses. Four LUDs exist within the Scratchings Timber Sale project area. These are: (1) Timber Production, (2) Modified Landscape, (3) Old-growth Habitat, and (4) Special Interest Area. The standards and guidelines for these LUDs were used for unit design and to analyze effects. The LUDs within the Scratchings Timber Sale project area are discussed and displayed in Chapter 1.

#### **Value Comparison Unit**

The Tongass National Forest is divided into Value Comparison Units (VCUs). A VCU is a distinct geographic area that encompasses a drainage basin containing one or more large stream systems. The Scratchings Timber Sale project area includes VCUs 6330, 6340, 6350, 6360, and 6370. VCU size is used to determine the size of Small Old-growth Habitat Reserves.

#### **Biogeographic Province**

The Forest Plan divides the Forest into 21 biogeographical provinces. Plant and animal species composition, climate, and geology within each province are generally more alike within than among adjacent provinces. Historical events (such as glaciers and uplifting) are important to the nature of the province and to the barriers that distinguish each province. The Scratchings Timber Sale project area lies in the Southern Outer Islands Province. This province is made up of isolated islands and is subject to strong oceanic influences. Temperatures are moderate year-round.

#### **Wildlife Analysis Area**

A wildlife analysis area (WAA) is an area of land defined by the Alaska Department of Fish and Game to report community harvests of selected wildlife species. The project area is WAA 901. The subsistence analysis for the Scratchings Timber Sale project area is compiled by WAA.

#### **Analyzing Effects**

Environmental consequences are the effects of implementing an alternative on the physical, biological, social, and economic environment. The Council on Environmental Quality regulations implementing the National Environmental Policy Act includes a number of specific categories to use for the analysis of environmental consequences. Several are applicable to the analysis of the proposed project and alternatives, and form the basis of much of the analysis. These specific categories are explained briefly here.

## Direct and Indirect Effects

Direct environmental effects are those occurring at the same time and place as the initial cause or action. Indirect effects are those that occur later in time or are spatially removed from the activity. Direct and indirect effects are combined in this Final EIS.

## Cumulative Effects

Cumulative effects result from incremental effects of actions, when added to other past, present, and reasonably foreseeable future actions, regardless of which agency or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time. Resource specialists considered past and ongoing activities as part of their existing conditions as well as analyzing them for their cumulative effects. The projects listed in Table 3-1 are the activities that are reasonably foreseeable in the Scratchings project area. These are the only activities that are reasonably foreseeable at this time; other actions such as future timber harvest on National Forest System or private lands are not planned at this time.

**Table 3-1. Reasonably Foreseeable Activities in the Scratchings project area**

Reasonably Foreseeable Activity	Description of Activity
Road storage contract	A road maintenance contract scheduled for 2007 will store about 6 miles of road, remove about 70 pipes, and reduce the risk to fish habitat along National Forest System (NFS) Road 1080000 from milepost 7.3 to milepost 12.8 in the eastern portion of the project area. This section of road is not planned for use in the Scratchings Timber sale. The pipes that are scheduled for removal include 16 fish culverts of which 11 have been identified as 'red pipes'. This contract will remove 50 percent of the red pipes that have been identified on Suemez Island.
Free use wood permits	Issuance of about 1 free use wood permit per year on Suemez Island (based on the current average of less than 1 per year), which would allow removal of 10,000 board feet by an Alaska resident.
Access Travel Management Plan	The Prince of Wales Access and Travel Management Plan Environmental Analysis is currently in progress. The Suemez Island Travel Management Plan proposed in this Final EIS is consistent with what is being proposed.



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### **Geographic Information System – Resource Information**

Much of the Tongass National Forest resource data resides in an electronic database formatted for a Geographic Information System (GIS). GIS software is used to assist in the analyses of data. GIS data is available in tabular (numerical) format, and as plots displaying data in map format.

GIS data used in this Final EIS has been updated using data collected during field reviews done by resource specialists. Resources that project activities may affect were field inventoried. Project-level layers will continue to be updated and added to the GIS layers as more information becomes available through implementation activities or other surveys.

### **Available Resource Information**

Knowledge is incomplete about many of the conditions and relationships of forest resources and social needs. Forest management is a complex and developing science. Wildlife population dynamics and habitat relationships are not completely understood. The interaction of forest resource supply with economic and social conditions and communities is the subject matter of an inexact science; however, basic data and relationships are sufficiently well established for the Responsible Official to make an informed choice between the alternatives, and to adequately assess and disclose the possible adverse environmental consequences (40 CFR 1502.22).



## Issues

### Issue 1 – Timber Harvest Economics

Timber harvest economics is the issue that involves the ability of Southeast Alaska's timber purchasers to make a profit and stay in business, and the implications for the economic health of the communities in the region. Concerns exist about the decreasing amount of timber available for sale from national forests and how an unstable supply affects local employment. Timber purchasers and affected communities are concerned about the quantity, quality, reliability, and profitability of the timber offered for sale from the Tongass National Forest.

Comments received during the scoping period and on the Draft EIS offered suggestions for improving overall timber harvest economics on the Tongass National Forest and for the Scratchings project. Suggestions included: helicopter logging should be optional, decrease helicopter yarding distances; ensure the value of timber will cover the cost of helicopter yarding; and make enough timber available to cover mobilization and startup costs. Unit-specific suggestions were also made and are addressed in the Responses to Comments (Appendix B).

### Units of Measure

The Scratchings analysis addresses timber harvest economics by considering the following factors:

- Total volume in million board feet (MMBF)
- Total Volume in hundred cubic feet (CCF)
- Logging costs per CCF
- Indicated Bid - dollars per CCF
- Current market value (direct income)
- Number of direct jobs supported

### Affected Environment

About 74,000 people live in towns, communities, and villages located on islands and coastal lands of Southeast Alaska. The Southeast Alaska region accounts for about 12 percent of the State's population and 6 percent of the land base. Federal lands comprise about 95 percent of Southeast Alaska, 80 percent within the Tongass National Forest. Southeast Alaska communities, which are within or adjacent to the Tongass National Forest, are largely dependent on the forest to provide natural resources for employment. This includes commercial fishing, timber harvest and processing, tourism, and mining. The forest is also needed for recreation and subsistence use.

### 3 Environment and Effects

The Scratchings project area is all of Suemez Island. Craig is 15 miles northeast of Suemez Island, located on Prince of Wales Island. Craig has a population of about 1,400 people. Klawock, population 900, is about 9 miles to the north of Craig. Timber harvest and wood processing has been a mainstay for employment on Prince of Wales Island since it was part of the primary offering area for the Ketchikan Pulp Company Long-term Contract. This contract was mutually cancelled in 1998, but many residents still seek employment in the logging, log transport and wood processing occupations.

Viking Lumber, Inc., located in Klawock, has an installed mill capacity of 80 MMBF per year and currently mills about 41 MMBF per year. They currently employ about 40 people (Parrent 2006). Several small mills are also located near Craig and throughout Prince of Wales Island, including a small concentration of mills located outside of Thorne Bay.

#### **Past Timber harvest on Suemez Island**

All previous harvest on Suemez Island totals 1,460 acres, equaling about 4 percent of the total project area (37,127 acres).

The earliest known logging occurred at the head of Port Dolores, around 1955. An area of about 105 acres was clearcut and the timber moved to the beach using tracked equipment. Most of this harvest area is now encumbered by the University of Alaska (see Figure 2-1). Other earlier harvest in the project area occurred on the sheltered northern half of Suemez Island, generally around Port Refugio. Four harvested stands are evident on photos or are on record today. These harvests; which were logged from 1961 to 1985 total about 36 acres. Roads were built from Port Refugio in 1986 to harvest six even-age units for a total 330 harvested acres. This sale ended in default and some parts of these units were not completely harvested.

Most of the harvest on Suemez Island occurred from 1994 to 1996. This was a Ketchikan Pulp Company Long-term Sale offering that harvested 26 even-aged units totaling 989 acres. This sale also included portions of units from the former sale that were not completely logged.

#### **Timber Supply and Market Demand**

The explanation of timber supply and demand on the Tongass National Forest and the rationale for considering timber harvest in the Scratchings project area at this time is explained in Appendix A of this document as well as Chapter 1. More information can also be found in the 1997 Tongass Land and Resource Management Plan (Forest Plan) Final EIS, Part 1 (pp. 3-248 to 3-307), and the Forest Plan Supplemental EIS (2003). The Forest Plan Amendment Draft EIS

(2006) describes the latest analysis for the Forest Plan planning cycle timber demand analysis.

## Timber Sale Economics

There are many variables that can increase the cost of timber sale offerings, and may carry significant economic risk for potential purchasers. Road construction, helicopter yarding, silvicultural prescriptions other than clearcutting, and other factors may increase costs. Those increased costs will then affect the timber value for the alternatives. The value of the timber for sale must be sufficient to cover this cost and offer a potential for profit to purchasers.

There are several factors that enhance the economic potential of the Scratchings project area and may in turn affect the timber supply to the forest products industry. These factors include an existing road system and log transfer facility (LTF) infrastructure, feasibility of cost-effective logging systems, relatively high volume per acre harvested, and a favorable species mix. The amount of timber volume will have an effect on employment as shown in Table 3I-7; which displays the support to direct employment that will result from logging and milling the volume in the timber sale.

## Road Access and LTF

The Scratching project will use the existing road system and the Port Refugio LTF on Suemez Island. All alternatives will require additional road segments extending from the road system to access timber or shorten helicopter yarding distances. Table 3I-1 shows the amount of existing and proposed roads by alternative within the project area. More information about roads and the LTF is found in the Transportation section of Chapter 3.

**Table 3I-1. Existing and Proposed Miles by Alternative**

	Alternative				
	1	2	3	4	5
<b>Miles of existing NFS road</b>	28	28	28	28	28
<b>Miles of proposed NFS road</b>	0	12	7	4	5
<b>Miles of proposed temporary road</b>	0	7	5	3	4

## Silvicultural Prescriptions

Silvicultural systems refer to a complete set of treatments used to manage forest stands and forest landscapes over long periods of time. This process includes the harvest or regeneration of the stand;



### 3 Environment and Effects

intermediate cuttings; and other treatments necessary for the development and replacement of the forest stand.

Generally, the less complex a silvicultural prescription is the more cost efficient it is. Even-aged management using the clearcut prescription usually results in less cost associated with logging because it is more efficient. See the Timber and Vegetation section for more information.

All the alternatives include a mix of even-aged clearcut and two-aged clearcut with reserves silvicultural prescriptions. Clearcut with reserves are mostly used with logging systems that will not increase costs and may reduce costs by leaving smaller diameter logs. Areas within the unit boundary have been deferred to: (1) maintain visual quality objectives, (2) benefit wildlife habitat (3) avoid operating on wetlands and pockets of questionable soil stability, (4) meet RAW requirements for windthrow concerns, and (5) help improve harvest economics by deferring areas of low, uneconomical volume. Areas that have been deferred are shown on the unit cards.

#### Timber Volume Calculations

Total unit volumes by alternative were calculated based on the average net Thousand board feet (MBF) volume per acre for the high, medium and low volume strata for that specific alternative. Alternative per acre values are based only on the actual stand exam plots that fell within harvest areas specific to that alternative. Using this process, there will be a slight difference between a unit's total volume depending on which alternative average per acre is being used, even if the unit acreage and prescription are the same between alternatives. Volumes for the alternatives are displayed in million board feet (MMBF) and CCF (Table 3I-2). The financial efficiency program uses CCF. The conversion from CCF to MMBF is approximately 2,100 – 2,300 CCF to 1 MMBF dependant on log taper. Taper is the difference between the smallest diameter and largest diameter of the log

**Table 3I-2. Estimated Unit Volumes in MMBF & CCF**

	Alternative				
	1	2	3	4	5
<b>MMBF</b>	0	36	25	17	20
<b>CCF</b>	0	82,014	53,738	38,400	44,174

#### Species Composition

The species composition for productive forest land in the Scratchings project area is displayed Table 3I-3. Table 3I-4 displays the species composition of the units proposed for harvest under each action



alternative. Table 3I-5 shows the volume of each species that would be harvested in each alternative. None of the recommended harvest prescriptions are expected to result in a significant change in species composition over that which existed prior to the harvest. Tree planting can be prescribed if post harvest regeneration surveys indicate that such a change has occurred or that natural regeneration is inadequate.

**Table 3I-3. Species Composition of Scratchings Project Area Unit Pool**

Species	Volume
Western Hemlock	58%
Sitka Spruce	25%
Western Redcedar	11%
Alaska Yellow-cedar	4%
Mountain Hemlock	1%
Shore Pine	Trace

**Table 3I-4. Average Species Composition of Proposed Harvest by Alternative**

Species	Alternative				
	1	2	3	4	5
Western Hemlock	0%	57%	60%	60%	62%
Sitka Spruce	0%	25%	24%	23%	25%
Western Redcedar	0%	14%	13%	13%	10%
Alaska Yellow-cedar	0%	5%	3%	4%	3%

**Table 3I-5 Volume of Species Harvested by Alternative**

Volume by Species in CCF	Alternative				
	1	2	3	4	5
Sitka Spruce	0	20,246	12,746	8,972	11,267
Hemlock	0	46,732	32,119	22,990	27,320
Alaska Yellow-Cedar	0	3,914	1,860	1,606	1,178
Western Redcedar	0	11,122	7,012	4,825	4,408
Total Net Sawlog	0	82,014	53,738	38,400	44,174

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#### Logging Systems

Logging systems are different ways that logs can be brought to a road and eventually to a mill. There are three systems that are prescribed in the action alternatives. They are generally split into ground-based and air-based systems. The air-based system most commonly used in Southeast Alaska is helicopter yarding. The two ground-based systems are shovel yarding and cable yarding.

Cable yarding systems are best suited for steep slopes. They are most efficient with clearcut harvest treatments. Cable yarding can be used for partial harvest, but it tends to increase logging costs. The average cost of cable yarding used in this analysis is \$46.97/CCF.

Shovel yarding is the least costly yarding method used in this analysis. Shovel yarding is best suited for slopes less than 30 percent. Normal yarding distance is about 300 feet. Depending on slope and ground conditions, longer distances are possible. Shovel yarding is used for the timber near the road with the remainder of the unit being cable yarded. Shovel yarding does provide some flexibility in the selection of trees to be harvested. This makes shovel yarding more suitable for partial harvest prescriptions. The average cost of shovel yarding used in this analysis is \$40.67/CCF.

Helicopter yarding is the most expensive yarding method due to the high cost of operating and maintaining a helicopter. Yarding distance, turn time (the time it takes the helicopter to make a round trip from landing to the unit and return), and the value of timber yarded influence the economic viability of helicopter yarding. Helicopter yarding is used where roads are not constructed to access the timber harvest units. Helicopter logging works well for partial harvest prescriptions. This yarding method causes the least amount of ground disturbance. The average cost of helicopter yarding used in this analysis is \$153.92/CCF.

Helicopter yarding has a large effect on the financial efficiency of an alternative. Alternatives containing more than 20 percent helicopter yarded volume may not be economical to operate at this time based on current market conditions. However, individual sale economics can be improved through various silvicultural prescriptions.

**Table 3I-6. Silvicultural Prescriptions and Yarding Systems**

Silvicultural System	Pre-scription	Yarding System	Alternative				
			1	2	3	4	5
<b>Even-aged Management (does not include deferral acreage)</b>	Clearcut <sup>1</sup>	Short Span Cable	0	656	516	327	409
	Clearcut <sup>1</sup>	Shovel	0	155	155	110	155
	Clearcut <sup>1</sup>	Helicopter	0	405	119	85	88
<b>Total Even-aged Management Acres<sup>2</sup></b>			0	1,216	791	522	651
<b>Two-aged Management (does not include deferral acreage)</b>	Clearcut with Reserves	Short Span Cable	0	70	34	34	34
	Clearcut with Reserves	Shovel	0	57	57	57	57
	Clearcut with Reserves	Helicopter	0	222	143	147	41
<b>Total Two-aged Management Acres<sup>2</sup></b>			0	349	234	238	132

<sup>1</sup>The only instance where dispersed reserve trees resulting from partial harvesting might occur inside cable or shovel yarded even-age clearcut harvest units is to achieve a windfirm buffer.

<sup>2</sup>Numbers may not total due to rounding

## Financial Efficiency

Financial efficiency is a comparison of those costs and benefits that can be measured in terms of actual dollars spent or received as a result of the project. Financial efficiency analysis offers a consistent measure in dollars for comparison of alternatives. This type of analysis does not account for non-market benefits, individual values, and benefits and costs that are not easily measured (FSH 2409.18).

Timber volumes in each alternative are estimates for sawtimber volume that would be produced. The analysis was done using the total volume for each alternative. Actual appraised value for any sale advertised for bid will depend on the amount of volume offered; road costs; logging systems used; and the market conditions at the time of appraisal if the units are offered in several sales.

## NEPA Economic Analysis Tool

The NEPA Economic Analysis Tool (NEAT) developed in 2001 was used to analyze alternatives for Scratchings EIS is based on the



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Transaction Evidence Appraisal System. NEAT calculates the indicated bid value for a mix of species and products, based on the past bidding history for timber sales. NEAT uses average logging costs, road costs, and timber values based on cost collection information and makes adjustments to the regional base period price for project specific characteristics.

Effective August 2005, Region 10 uses the Residual Value Appraisal System to appraise sales for offer. The Residual Value Appraisal System uses cost collection data including selling values, actual logging costs, and manufacturing costs to arrive at an appraised value or estimated indicated bid, also called the expected bid in NEAT.

An updated version of NEAT has been developed (NEAT-R) based on the Residual Value Appraisal System (NEAT-R). This program is being tested on several projects in the earlier analysis stages on the Tongass National Forest. Since this program is still in the trial stages and for consistency between Draft EIS and Final EIS, NEAT is used for Scratchings Final EIS to compare the financial efficiency of the alternatives. Any actual sale offering will use the Residual Value Appraisal System to appraise the timber for advertisement and will use cruise data for the volume estimates. Any sale that appraises deficit currently cannot be advertised for bid in concurrence with the 2006 Appropriations Bill.

#### **Forest Service Costs**

The average Region 10 budget allocation costs and management expenses are subtracted from net stumpage revenues to determine net value. The costs and management expenses include environmental analysis, sale preparation, sale administration and engineering support. Forest Service cost per hundred cubic feet (CCF) is based on the Region 10 average budget allocation of \$20.50/CCF for analysis, \$11.50/CCF for sale preparation, \$4.50/CCF for sale administration and \$14.00/CCF for engineering support.

Environmental analysis and documentation costs include field inventory and the analysis of data, public involvement, and the preparation of documents that satisfy the requirements of the National Environmental Policy Act. The typical timeframe for a timber sale environmental analysis from scoping to the decision is about 2 to 4 years and involves many resource specialists. Sale preparation costs include unit layout and cruising. Sale administration consists of administering the timber sale contract after sale award through sale completion. Normally costs are associated with office documentation, timber sale accounting and site visits to the sale area. Engineering support consists of planning and timber sale contract administration activities associated with new facility and road construction; use of



existing facilities and road maintenance. The actual costs are not known at this time and can only be estimated.

### **Payments to States**

Prior to 2000, in states with national forests, 25 percent of the returns to the US Treasury from activities such as timber sales, were returned to the states for distribution back to the counties (or in Alaska, boroughs) which had National Forest System lands. Those payments were called the “25 percent fund” and were dedicated by law to support roads and schools. In 2001, Secure Rural Schools and Community Self-Determination Act of 2000 was enacted to stabilize federal payments to states with declining timber receipts due to the decrease in timber harvesting on National Forests. This legislature was authorized for fiscal years 2001 to 2006 and allowed the option to receive a full payment amount based on the high 3-year historic average of the 25 percent payments.

For fiscal years 2001 through 2006, Alaska boroughs and communities elected to receive a full payment amount rather than 25 percent of the receipts. Those payment amounts were primarily dedicated to road and school funding. In Alaska, this payment amount was approximately \$9 million per year. The President’s FY 2007 budget for the Forest Service includes a legislative proposal that would reauthorize the Secure Rural Schools and Community Self-Determination Act of 2000 for an additional 5 years. If not reauthorized, the payments would revert back to the 25 percent fund.

### **Effects of the Alternatives**

#### **Direct and Indirect Effects**

The difference in indicated bid rates among the action alternatives can be attributed to multiple factors, including:

- Differences in species composition, volume per acre harvested, and timber quality
- Difference in harvest prescriptions
- Proportion of cable, shovel and helicopter yarding systems
- Amount of road construction and reconstruction
- Differences in haul distances
- Unique costs associated with the alternative

The summary of the NEAT results are found in Table 3I-7 and Table 3I-8. Tables 3I-9 and 3I-10 are also based on data derived from NEAT. Results of the updated NEAT runs, using the same NEAT version as used in the Draft EIS, are more positive in this Final EIS than in the Draft EIS. Although the NEAT runs are prepared to facilitate a comparison of alternatives, the difference warrants an explanation. The differences are attributable to several factors and vary

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by alternative. Those factors include road costs and more efficient logging systems, among other factors. The most significant factor is road costs. Road costs were reduced in the Final EIS. As an example, road costs in Alternative 2 of the Draft EIS, included the purchase of 10 new modular bridges. The total cost of the bridges was estimated to be \$1,405,000. The Final EIS appraised for the use of government furnished, used modular bridges. These government furnished bridges would be moved to the sale. The total cost of the bridges was estimated to be \$175,000, a difference of \$1,230,000. Additional saving were made by changing helicopter yarding areas from clearcutting to partial cutting (24" minimum dbh limit) where silviculturally approved. This reduced the number of low value, small diameter trees that would have to be cut and removed by helicopter.

**Table 3I-7. Logging Costs per CCF by Alternative Compared to Region 10 Averages (3Q2005) from NEAT**

Logging Costs (\$ per CCF)	Alternative					Region 10 Average
	1	2	3	4	5	
Stump to truck	0	116.79	98.76	108.63	90.35	115.13
Haul, transfer, barge, tow	0	25.37	23.63	21.08	21.84	43.81
Road maintenance	0	1.68	1.16	0.92	1.04	4.64
Unique Adjustments <sup>1</sup>	0	3.34	3.70	3.99	4.63	7.86
Road Costs <sup>2</sup>	0	42.72	39.62	30.38	37.71	37.77
Total costs per CCF	0	189.92	166.87	165.00	155.58	209.21

<sup>1</sup> Remote camp costs

<sup>2</sup> More information in the Transportation section

**Table 3I-8. NEAT Results by Alternative**

	Alternative				
	1	2	3	4	5
Total Volume (MMBF)	0	36	25	17	20
Total Volume (CCF)	0	82,014	53,738	38,400	44,174
Indicated Bid \$/CCF	0	12.72	28.34	21.36	36.84
Total (\$)	0	1,043,473	1,522,666	820,073	1,627,329

Total volumes are net volumes based on stand exam plots and the silvicultural prescription. Total volume rounded to nearest CCF (one hundred cubic feet). Total value will vary slightly when multiplied by indicated bid value.

The “Indicated Bid” for each of the 12 Appraisal Quarters between June 2001 and March 2004 is calculated within NEAT. The indicated bids are calculated for 12 appraisal quarters to determine if a sale offering would be positive in a specific quarter and to demonstrate market fluctuations and trends. The economics of a given alternative can be estimated for a range of market conditions by looking at the indicated bid values of the alternatives over a period of time.

## Employment and Income

Direct jobs are in logging, construction, and sawmills. Table 3I-9 displays the estimated direct income and annualized jobs for each alternative. These estimates are based on the assumption that all of the timber is sold, and that all Alaska yellow-cedar harvested would not be domestically processed. The estimate of the sawmilling jobs was adjusted after NEAT was run to account for the assumption of 100 percent Alaska yellow-cedar export. Not all sawmill jobs may be in Southeast Alaska because there are limited opportunities to process smaller diameter and lower quality logs locally, since purchasers would have the option to ship these logs (up to 50 percent of the total sale volume) to the lower 48 states for processing with the approval of the Regional Forester.

The Forest Plan estimated the amount of employment and income likely to result from timber harvest by converting board feet to annualized jobs and income, using multipliers developed for Southeast Alaska (Forest Plan Final EIS Part 2, pp. 3-479 and 3-480). In Southeast Alaska sawmilling results in 4.31 annualized jobs per MMBF and logging results in 2.07 annualized jobs per MMBF. This data is based on 2000 to 2004 data and on total volume sold on the Tongass National Forest (Alexander, 2006).

**Table 3I-9. Estimated Direct Income and Annualized Jobs Related to Timber Harvest in the Scratchings Project Area by Alternative**

	Alternative				
	1	2	3	4	5
<b>Direct Income (million \$)</b>	0	9.6	6.3	4.5	5.2
<b>Logging Jobs</b>	0	80	52	37	43
<b>Sawmilling jobs<sup>1</sup></b>	0	130	86	61	72
<b>Direct Jobs</b>	0	210	138	98	115

<sup>1</sup> Does not include Alaska yellow-cedar volume

All action alternatives would use the existing road system and LTF for transportation of people, equipment, and logs. All alternatives use the cable, shovel and helicopter yarding methods to some extent.



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### Alternative 1

No timber would be harvested in the project area at this time. No direct jobs or income would be created from this project. Timber needed to meet the estimated demand would have to be harvested from other areas on the Tongass National Forest.

### Alternative 2

This alternative would offer 82,014 CCFs (36 MMBF) of timber for harvest. This is the alternative that has the highest volume of timber, which generally increases appraised value; however a higher percentage of helicopter yarding, lengthy road construction, and long haul distances have the effect of reducing the indicated bid price. This is the baseline action alternative for comparing the economics of these alternatives.

Estimated logging costs would be \$189.92 per CCF. The indicated bid is \$12.72 per CCF. About 210 direct annualized jobs and \$9.6 million in direct income would be created (Tables 3I-7, 3I-8, and 3I-9).

### Alternative 3

This alternative would offer 53,738 CCFs (23.0 MMBF) of timber for harvest. Alternative 3 was developed to create an economical sale by reducing the percentage of helicopter yarding as well as removing areas with lengthy road construction costs and long haul distances from Alternative 2.

Estimated logging costs would be \$166.87 per CCF. The indicated bid rate is \$28.34 per CCF. About 138 direct jobs and \$6.3 million in direct income would be created (Tables 3I-7, 3I-8, and 3I-9).

### Alternative 4

This alternative would offer 38,400 CCFs (17 MMBF) of timber for harvest. Alternative 4 has a low average helicopter yarding distance and fewer miles of road construction than Alternative 2 resulting in a high indicated bid price.

Estimated logging costs would be \$165.00 per CCF. The indicated bid is \$21.36 per CCF. About 98 direct jobs and \$4.5 million in direct income would be created (Tables 3I-7, 3I-8, and 3I-9).

### Alternative 5

This alternative would offer 44,174 CCFs (20 MMBF) of timber for harvest using. Alternative 5 would offer a lower amount of timber compared to Alternatives 2 and 3, which generally decreases appraised



value; however the lower percentage of helicopter yarding and short haul distances has the effect of increasing the indicated bid price.

Estimated logging costs would be \$155.58 per CCF. The indicated bid is \$36.84 per CCF. About 115 direct jobs and \$5.2 million in direct income would be created (Tables 3I-7, 3I-8, and 3I-9).

Indirect calculations are not included with this analysis. Robertson (2003) found that even in small communities where shifts in basic employment may be extreme, the economic base hypothesis (sometimes referred to as indirect job effects) is not supported by the empirical evidence. Linear indirect impact multipliers derived from modeling are, therefore, not applicable in small communities (Alexander, 2006). Effects on other employment opportunities, such as those for tourism and commercial fishing are not included in the financial efficiency analysis. Because of the regional nature of these occupations, this analysis is done at the Forest planning level and is included in the Forest Plan amendment DEIS (January 2006).

### **Forest Service Costs**

The net revenue estimates are based on Region-wide averages of costs, which vary from one sale to another. Although these costs are based on timber volume, the cost fluctuates more with the amount of area examined and the accessibility of that area. Sale preparation costs increase significantly when implementing partial harvest units, compared to clearcut harvest units. Accessibility to the units is another major cost factor. The Scratchings project units will probably be less expensive to prepare for sale and administer contracts due to the existing road system. All of these factors could cause the cost estimates in Table 3I-10 to be higher or lower than Region 10 averages.

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**Table 3I-10. Estimated Forest Service Financial Costs and Revenues from NEAT**

Forest Service Costs <sup>1</sup> in \$	Alternative				
	1	2	3	4	5
<b>Analysis and Documentation<sup>2</sup></b>	1,681,282	1,681,282	1,681,282	1,681,282	1,681,282
<b>Sale Preparation</b>	0	943,158	617,982	441,605	508,002
<b>Sale Administration</b>	0	369,062	241,819	172,802	198,783
<b>Engineering Support</b>	0	1,148,193	752,326	537,606	618,437
<b>Total Project Costs</b>	1,681,282	4,141,695	3,293,409	2,833,295	3,006,504
<b>Current Market Revenue</b>	0	1,043,473	1,522,666	820,073	1,627,329
<b>Net Revenue<sup>3</sup></b>	(1,681,282)	(3,098,222)	(1,770,743)	(2,013,222)	(1,379,175)

<sup>1</sup> Based on USDA Forest Service, Region 10 average budget allocation for the cost center (cost center \$/CCF x alternative CCF = cost).

<sup>2</sup> Cost of the Analysis and documentation is based on the proposed action (Alternative 2).

<sup>3</sup> Current market Revenue (Table minus Total project costs, ( ) indicates negative value.

#### Cumulative Effects

The cumulative effects analysis area for timber economic analysis is Southeast Alaska. Economic effects are analyzed in the Tongass National Forest Plan FEIS, Forest Plan SEIS, and most recently in the Forest Plan Amendment DEIS. The 5-year Tongass Timber Sale Plan has been updated and is adjusted annually to reflect decisions on projects under environmental analysis after the decisions have been made. Alternatives 2 through 5 would contribute to the timber – related economy of Southeast Alaska. Alternative 1 would not and timber from other areas on the Tongass would have to be used to provide a supply. Appendix A of this Final EIS includes information about how the Tongass timber program is structured.

Scratchings is the only federal timber sale activity planned on Suemez Island in the next five years. Currently, no timber sales are expected on privately held lands on Suemez Island; the University of Alaska does not have any plans for their lands in the next 3-5 years (see Chapter 1 of this Final EIS).

## **Issue 2 – Cumulative Impacts in the Port Dolores Watershed from Road Building and Timber Harvest**

Some members of the Scratchings IDT were concerned about past management activities that occurred in this watershed. The cumulative effects of sediment from past harvest, roading, windthrow, and landslides in Dolores Watershed have led to Issue 2 and promoted the development of Alternative 4. Alternatives 2, 3, 4, and 5 meet Forest Plan Standards and Guidelines. In response to the cumulative effects identified in Dolores Watershed, the project Interdisciplinary Team (IDT) proposed an alternative that further reduced the risk of sedimentation in Dolores Watershed. This was accomplished in Alternative 4 by eliminating some proposed road construction in the vicinity of Dolores Creek, and changing some cable harvest areas to helicopter logging, as well as removing some areas from harvest. Harvest acreage in Dolores Watershed was further reduced between the Draft EIS and the Final EIS in response to economics and comments from the public.

### **Units of Measure**

The Scratchings analysis addresses cumulative impacts in the Dolores Watershed from road building and timber harvest by considering the following factors:

#### **Within Dolores Watershed within the last 30 years:**

- Acres of timber harvest
- Miles of road
- Number of stream crossings
- Percent of watershed harvested

### **Affected Environment**

Dolores Watershed is 2,150 acres in size. The watershed is characterized by moderately steep hillslopes, efficient drainage densities, high stream transport potential, high stream storage potential, high value fish habitat, and moderately unstable soils. Unstable soils have been identified and associated with weathered bedrock across the watershed and glacial till soils in the lower elevations. Fifty-two percent of the watershed area is on Mass Movement Index (MMI) 3 and 4 soils which pose relatively moderate to high risk to landslides. Portions of the watershed are exposed to high winds and are at high risk to wind damage.

The watershed has experienced harvest across 19% of its area, 15% in the last 30 years (Table 3WA-3 in the Watershed and Fisheries section, this chapter). Five miles of system and temporary road extend across

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mid-slope and upper elevations of the watershed. Windthrow and landslides have occurred within the harvest and roaded areas contributing sediment to the stream system (Prussian 2005). Past harvest that occurred greater than 40 years ago included fourteen percent of the floodplain riparian area along the northern tributary stream. Conifer regeneration along this portion of stream is limited and alder trees dominate the floodplain riparian area. Landslides have been identified in both managed and natural areas. Sediment resulting from landslides, windthrow, and road crossings have contributed to aggraded streams, hence reducing pool habitat, channel complexity, and stream function.

Please refer to the Watershed and Soils Sections for additional information on Dolores and other watersheds in the Scratchings project area.

#### Environmental Consequences

The following tables summarize effects and cumulative effects in Dolores Watershed. Please refer to the Watersheds and Fisheries, and Soils Sections for additional information on effects in Dolores Watershed.

**Table 3I-11. Units Proposed for Harvest in Dolores Watershed by Alternative**

Units	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
634-066	-	c	c	c	c
634-100	-	c	c	h	c
634-101	-	c	c	h	c
634-011	-	c	c	c/h	c
634-010	-	c	c	-	c
634-002	-	c/h	c/h	-	c/h
634-003	-	c	c	c	c
634-004	-	c	c	h	c
634-005	-	c/h*	c	c	c
634-008	-	c	c	c	c
634-009	-	h	h	-	h
634-044	-	h	-	-	-
634-045	-	h	-	-	-
634-046	-	h	-	-	-
634-047	-	h	-	-	-

\*the helicopter harvest in 634-005 is additional acreage compared to the other Alts, h = helicopter, c = short span or shovel, - = unit not being proposed for harvest



**Table 3I-12. Cumulative Harvest acres, Road Miles, Road Crossings, and Percent Watershed Harvest for Dolores Watershed, by Alternative**

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Acres of Timber Harvest	327	753	616	469	616
Miles of Road*	5	10	10	6	9
Percent of Watershed Harvest Area**	15%	35%	29%	22%	29%
<b>Number of Stream Crossings</b>					
Class I	0	2	1	0	1
Class II	0	2	2	0	2
Class III	6	7	7	0	7
Class IV	1	19	19	6	15
<b>Total Stream Crossings</b>	<b>7</b>	<b>37</b>	<b>36</b>	<b>13</b>	<b>32</b>

\*Miles of road include both system and temporary road

\*\*Percent of watershed harvested is within the last 30 years.

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### Issue 3 – Timber Harvest and Road Construction in Roadless Areas and Unroaded Areas

Comments that were received during the scoping period opposed timber harvest and road construction in roadless areas on the Tongass National Forest in light of the court ruling in NRDC v. USFS.

#### Units of Measure

The Scratchings project analysis addresses cumulative impacts from road construction in roadless areas by considering the following factors:

- Acres of timber harvest in Inventoried Roadless Area 502 and in unroaded areas
- Miles of new road construction in Inventoried Roadless Area 502 and in unroaded areas
- Acres of inventoried Roadless Area 502 retaining roadless characteristics
- Acres of unroaded areas retaining unroaded character

### Affected Environment

The Tongass National Forest prepared a Final Supplemental Environmental Impact Statement (SEIS) in February 2003 that evaluated alternatives for recommending Wilderness designations to Congress. The SEIS supplements the 1997 Tongass Land and Resource Management Plan Revision Final EIS (Forest Plan). The 109 inventoried roadless areas on the Tongass were evaluated using updated information and mapping that best reflects current conditions. The Forest Plan SEIS identified and evaluated roadless areas that met minimum criteria for potential inclusion in the National Wilderness Preservation system using the Wilderness Attribute Rating System (WARS) in 1977. This system was used to inventory the Wilderness characteristic of inventoried roadless areas. The purpose of WARS was to provide a measure of an area's wilderness quality, based on the key attributes of Wilderness as defined in the Wilderness Act. The decision on the SEIS did not identify any areas for recommendation for the National Wilderness Preservation System. Inventoried Roadless Area 502 Suemez Island (IRA 502) received a WARS rating of 20 out of 28, which ranked moderately compared to other inventoried roadless areas on the Tongass.

Inventoried Roadless Area 502 Suemez Island (IRA 502) is located within the project area. It is 24,478 acres and allocated to the following Land Use Designations (LUDs):

**Table 3I-13. LUD Acreage for Project Area and IRA 502**

<b>Land Use Designation</b>	<b>Scratchings project Acres</b>	<b>IRA 502 (Suemez Island)</b>
Timber Production*	8,844	5,823
Modified Landscape*	13,078	5,277
Special Interest Area	9,666	9,638
Old-growth Habitat	4,373	3,618
Semi-Remote Recreation	72	72
<b>Total</b>	<b>35,961</b>	<b>24,268</b>

\*Acres of suitable forest land within Timber Production and Modified Landscape LUDs are available for harvest.

### **Suemez Island IRA 502**

Appendix C of the Supplemental Environmental Impact Statement (SEIS) for the Forest Plan identifies IRA 502 of 24,478 acres on Suemez Island (see Figure 2-1). The special values of IRA 502 are its historic value to the native cultures of Southeast Alaska. Volcanic material used for traditional weapons have been traced back to Suemez Island from various locations in Southeast Alaska. The unique geologic features of the area produce materials that were mined by native populations and traded throughout Alaska. IRA 502 is also characterized by rugged shorelines and some large sandy beaches. The area is home to populations of Sitka black-tailed deer; wolves; black bear; various small mammals; and sea birds along the coast. Known goshawk nests are located in the southeast Port Refugio area. More information about IRA 502 can be found in Forest Plan SEIS Appendix C2 pp 292-301.

### **Unroaded Area**

Unroaded areas do not meet the criteria for Wilderness because of the size criterion but were identified during the inventory for the SEIS. Suemez Island also has an unroaded area of 2,606 acres in VCUs 6330 and 6350. This area has many of the same attributes as IRA 502 but it does not contain geologically unique areas.

### **Evaluation of the values of Suemez IRA 502**

The human and ecological values discussed here were identified as characteristics of inventoried roadless areas during the national analysis for the Forest Service Roadless Area Conservation Rule (1/12/2001). The Roadless Area Conservation Rule has been the subject of several lawsuits. In the most recent ruling (9/20/06), the court re-instituted the rule as it appears in the 2004 version of 36 CFR Parts 200 to 299. The rule in effect includes the text at 294.14(d): "this subpart does not apply to road construction, road reconstruction, or the cutting, sale or

### 3 Environment and Effects

removal of timber in inventoried roadless areas on the Tongass National Forest".

#### **Proximity to Wilderness and Other Inventoried Roadless Areas**

Most of Southeast Alaska is currently unroaded. Lands withdrawn by Congress such as Wilderness and National Monuments comprise about 41 percent of the Tongass National Forest. About 90 percent of the inventoried roadless areas in the 2002 SEIS inventory, not including designated Wilderness areas, are within land use designations that would retain their unroaded condition as designated by the 1997 Forest Plan, as amended. Past legislation and the Forest Plan determined the spatial placement and distribution of Wilderness and inventoried roadless areas across the landscape for the enjoyment of people who want a remote, solitary experience.

There are several inventoried roadless areas (IRAs) in the proximity of IRA 502. For example, IRA 505 Soda Bay (63,147 acres) is located directly east of Suemez Island, on mainland Prince of Wales Island. South of Suemez Island is IRA 501 Dall Island (111,245 acres). In addition, to the north of Suemez Island is IRA 503 Outer Islands (99,891 acres), which includes Noyes, Lulu and Baker Islands. Thus, IRA 502 Suemez Island is adjacent to 274,283 acres of other inventoried roadless areas. These IRAs are all located on islands so they are not contiguous. Much of these IRAs are allocated to non-development LUDs.

#### **Amount of Human Disturbances**

Commercial logging has occurred on Suemez Island since 1955 with the largest sale occurring in the mid-1990's. Prior to the relatively recent timber harvests, Suemez Island was visited by native Alaskans to obtain obsidian. Spanish and British explorers also ventured onto the islands shores.

The southern end of the IRA 502 is surrounded by saltwater and the northern boundary is determined by the Suemez Island transportation network. The road system is not connected to any community. The saltwater channels are navigational waterways used by commercial barging operations, commercial fishing vessels, commercial outfitter/guides, and many private recreational boaters. Noise from these traffic routes, as well as noise from aircraft can be heard from within the IRA 502. These influences affect the degree of solitude available in the area and reduce the pristine nature of IRA 502.

#### **Biological Values**

The vegetation is typical of Southeast Alaska. The area is primarily forested, with a third being non-productive forest and small areas of muskeg. There are mountains near the coastline to the elevation of about



2,000 feet as a result of volcanic eruptions. Only a small area (175 acres) is alpine habitat.

There are no terrestrial Threatened and Endangered species that use either IRA 502 or the unroaded area. Cataloged goshawk nests are located southeast of Port Refugio. This area has populations of Sitka black-tailed deer, wolves, and black bear. There are populations of small mammals, such as ermine and river otter, and land birds. Along the coast, there are large numbers of sea birds and a few marine mammals. Migrating birds use the area on their travels (Forest Plan Appendix C2-293).

IRA 502 does not contain any primary salmon or sport fish producing streams (ADF&G 1998). The Anadromous Waters Catalogue identifies several small fish-bearing streams in this roadless area, draining into Port Delores, Port Santa Cruz, Indiada Cove, Aquada Cove, Arena Cove, and along the southeast shore of Suemez Island. These streams provide habitat for coho, pink, and chum salmon (ADF&G 2000).

### **Physical Values**

The Arena Cove/Cape Felix Special Interest Area (9,456 acres) in the southwestern part of IRA 502 was classified for its unique geological features. This area was allocated in the 1997 Forest Plan as an area of geologic interest and was intended to encompass the area of volcanic vents and flows between Cape Felix, Arena Cove and Port Santa Cruz. This Special Interest Area is recommended for modification in the Forest Plan Amendment, Appendix L since the current boundaries do not include all of the geologic features. The proposed area would protect a number of different volcanic surface flow types, obsidian sources, volcanic vents, and unique geomorphic features such as the formations found on the beach west of Cape Felix and the waterfall and grotto near the western margin of the volcanic area.

### **Human uses**

Suemez Island has a long history of use by Alaska Natives. Cultural records have shown that traditional stone tools utilizing obsidian from Suemez Island have been identified throughout Southeast Alaska. Cultural resource surveys have been conducted on Suemez Island, but a traditional obsidian quarry has not been encountered (see the Heritage section in Chapter 3).

### **Research Values/ Reference Landscapes**

Monitoring of many characteristics including archeological sites, wildlife populations, karst and geological features, soils and recreation have taken place on Suemez Island. The Forest Service Science Labs, the branch of the Forest Service that conducts research, has not proposed any research projects on Suemez Island. No private research projects examining comparisons of managed and unmanaged landscapes have been proposed for the area.

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#### Environmental Consequences Direct and Indirect Effects

##### Alternative 1

Alternative 1, the No-action Alternative, would have no effect on the roadless character because no loss of acres or effects to values would occur due to timber harvest and road construction.

##### Alternatives 2, 3 and 4

These three alternatives would reduce the amount of acres retaining roadless character within the IRA 502 and reduce the undisturbed character of the unroaded area. The amount of the reduction is shown in Table 3I-14. This reduction is estimated by assuming the loss of roadless character does not stop at the unit boundary or road prism. Additional effects from the harvest and road disturbance are anticipated within the roadless area adjacent to these disturbance boundaries. These additional disturbance acres are estimated by adding a buffer of 600 feet around harvest unit boundaries and 1200 feet along each side of the road to account for this "edge effect." The 600 feet and 1200 feet are based on how the roadless inventory was completed for the 2003 Forest Plan SEIS.

**Table 3I-14. Proposed harvest acres in the Suemez IRA 502 and Unroaded Area and acres retaining roadless characteristics following proposed harvest.**

	Existing Condition	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
<b>Suemez Inventoried Roadless Area 502</b>	24,356	0	698	156	44	0
<b>Unroaded Area</b>	2,606	0	79	79	79	0
<b>Acres Retaining Roadless Characteristics in IRA 502</b>	24,356	24,356	21,832	23,670	24,195	24,295
<b>Acres Retaining Unroaded Characteristics in Unroaded</b>	2,606	2,606	2,077	2,076	2,076	2,430

##### Alternative 2

Alternative 2 proposes to harvest approximately 698 acres in IRA 502. This would reduce the area containing roadless characteristics from 24,356 acres to 21,832 acres, based on the buffers around harvest activities described above. New road construction in the IRA 502 would be approximately 5 miles; however, all new roads would be

stored after completion of harvest activities. Although the roads would be stored, these road miles and surrounding buffers were removed from the acres retaining roadless characteristics.

Alternative 2 proposes to harvest approximately 79 acres and construct 0.4 miles of road in the unroaded area. The area retaining unroaded characteristics would be reduced from 2,606 acres to 2,527 acres. All harvest units are on the western fringe of this unroaded area.

The harvest units are not in the Special Interest Area LUD and are not likely to affect existing recreation uses in the area. The qualities of IRA 502, which make it unique such as cultural sites, geological formations and open beaches, exist within the Special Interest Area LUD and would not be disturbed by timber harvest activities.

Limited effects to biological values in the northern portion of IRA 502 are possible due to harvest activities (see Wildlife sections, Chapter 3). Due to stream buffers and coastal buffers, effects to fisheries resources are not likely.

The physical values identified for IRA 502 are mostly located in the southern portion of the island, where timber harvest activities are not proposed. With implementation of project design elements as described in Chapter 2 of this Final EIS, no effects to karst and geological features are expected.

Opportunities for research and comparisons of managed and unmanaged landscapes would continue to be possible, because 90 percent of IRA 502 would not be affected by harvest activities. Alternative 2 would have the greatest effect on IRA 502 and the unroaded area. This alternative would harvest approximately 600 acres of the northern portion of this inventoried roadless area. Although 600 acres would no longer retain roadless characteristics under alternative 2, the majority of IRA 502 would possess roadless characteristics and would be available for research.

### **Alternative 3**

Alternative 3 proposes to harvest approximately 156 acres in IRA 502. This harvest would reduce the area containing roadless characteristics from 24,356 acres to 23,670 acres. Approximately 79 acres would be harvested from the unroaded area, reducing the area of unroaded character from 2,606 acres to 2,077. This alternative would construct 1.5 miles of road in the IRA 502 and 0.3 miles in the unroaded area. The loss acres from IRA 502 would not reduce the roadless acres below 5,000 acres. The harvest acres and road construction proposed in Alternative 3 are consistent with the Timber Harvest LUD.



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Alternative 3 does not proposed to harvest acres in the northern portion of IRA 502. The proposed acres are and road construction would take place south of Port Santa Cruz. Since the northern portion of IRA 502 would remain intact, minimal impacts to biological values would occur in the area. Buffers and the decreased harvest area in Alternative 3 would limit effects to fisheries resources.

The unique physical values of IRA 502 are located in the Special Interest Area and are not likely to be affected by harvest activities associated with Alternative 3. Minimal effects to geological features may take place in the area south of Port Santa Cruz (see Geology and Karst section, this chapter).

Opportunities for research would not be affected by Alternative 3. Large tracts of land for comparisons between managed and unmanaged areas would be available.

#### **Alternative 4**

Alternative 4 proposes to harvest approximately 44 acres in IRA 502 and proposes no road construction in IRA 502. The harvest of 44 acres from IRA 502 would reduce area with roadless characteristics from 24,356 to 24,195 acres. Proposed road construction in the unroaded area would be 0.3 miles and proposed timber harvest would equal 79 acres, which would reduce the unroaded area from 2,606 to 2,076 acres.

Each of the Alternatives 2-4 propose acres of harvest in IRA 502, which is consistent with Forest Plan analysis and the timber production LUD for these sections of the inventoried roadless area. Timber harvest activities would impact the northern portion of IRA 502 for Alternative 2 and a relatively small area south of Port Santa Cruz in Alternatives 3 and 4, with a net loss of acres and a higher level of development than the existing condition. These changes, however, are supported by Forest Plan direction.

Like Alternative 3, Alternative 4 proposes harvest in and road construction on a small unit south of Port Santa Cruz. The impacts to biological, physical and research values are likely to be similar or less than those for Alternative 3. The majority of IRA 502 would remain unaffected by harvest activities in Alternative 4.



### **Alternative 5**

Alternative 5 does not propose to harvest any acres or construct any roads within IRA 502 or the unroaded area. Due to the buffers around harvest units outside the roadless area, the number of acres for IRA 502 would decrease from 24,356 to 24,295 acres for Alternative 5. Since no acres would be harvested or roads built within IRA 502, Alternative 5 would have no effect on the inventoried roadless area designation.

### **Cumulative Effects**

In the 1990s, timber harvest activities reduced the overall size of the roadless area on Suemez Island. Harvest acres and the construction of 37 miles of roads (22 miles are currently open) affected the majority of the northeastern and central portions of the island. The boundaries of IRA 502 reflect the changes following this timber activity.

### **Alternative 1**

The No-action Alternative would have no cumulative effects on roadless character because no loss of roadless or unroaded character would occur due to timber harvest and road construction.

### **Alternatives 2, 3, 4, and 5**

The USDA Forest Service and the University of Alaska are not planning future timber sales on Suemez Island within the next 5 years. Since no timber sales are reasonably foreseeable on Suemez Island, no additional effects on roadless or unroaded character from harvest or road building are expected at this time.

The timber harvest activities currently proposed within the development LUDs are not likely to greatly affect the unique values of IRA 502.

### Other Resource Analyses

This section describes resources and other considerations that are not likely to be affected by any of the proposed activities, or would not be affected to a significant degree. Concerns for some of these resources were raised during public involvement for this project. The Forest Plan has addressed the management implications of most of these issues through the establishment of Forest-wide standards and guidelines, which are designed to prevent, reduce, or mitigate adverse impacts when implemented at the project level.

### Wildlife

The species that do occur in this complex of southern outer islands include the dusky shrew, northern flying squirrel, Keen's mouse, long tailed vole, ermine, wolf, river otter, Sitka black-tailed deer, black bear and mink (MacDonald and Cook 1996 in Nowacki et al. 2001 p. 96).

### Management Indicator Species

Management Indicator Species (MIS) are species whose response to land management activities can be used to predict the likely response of a wide range of species with similar habitat needs. Under the MIS concept the responses to management activities of a relatively few species are studied and monitored in order to predict the impacts to entire assemblages of species and associated habitat. The 1997 Tongass Land and Resource Management Plan, as amended (Forest Plan) identified thirteen terrestrial MIS for the Tongass National Forest. Some of these species do not occur within the Scratchings project area. Other species are difficult to monitor; would not be affected by the proposed activities; would have their habitat needs protected by standards and guidelines; or can be represented by other MIS.

Forest MIS that were not analyzed for this project include; brown bear, mountain goat, red squirrel, Vancouver Canada goose, bald eagle, river otter, American marten and black bear. These species were not analyzed for the following reasons:

- Brown bear, mountain goat and red squirrel are not found in the project area.
- Vancouver Canada Goose habitat including lakes, muskegs and forested muskegs, habitats that are generally protected under Forest Plan standards and guidelines.
- Bald eagle and river otter habitat is protected through Forest Plan standards and guidelines.
- Black bears do not typically need old-growth habitat to fulfill a critical part of their life requirements.

The American marten is discussed in this document not as an MIS but is included in the endemic mammal section. American marten do occur on Suemez Island but the forest stand structure standards and guidelines listed in the Forest Plan for marten do not apply on Suemez Island because it is not located within a high risk biogeographic province. Section A1 of the Forest Plan standards and guidelines for marten provides and conserves habitat to assist in maintaining long-term sustainable marten populations. These standards and guidelines should be applied where marten mortality concerns have been identified. ADF&G has said that marten mortality is not a concern on Suemez Island (per. comm. Boyd Porter Feb.2007). See Table 3W-7 for proposed POG acres harvested for each alternative.

The Sitka black-tailed deer and the Alexander Archipelago wolf were selected as project MIS because: they depend on low elevation old-growth for winter habitat; they are affected by harvest of old-growth forest; and their habitat needs are well documented by research. The deer habitat capability model was developed for the Forest Plan and has been peer reviewed. The wolf was selected because of the prey/predator relationship with Sitka black-tailed deer and as a furbearer.

The hairy woodpecker (*Picoides villosus*), brown creeper (*Certhia americana*), and the red-breasted sapsucker (*Sphyrapicus ruber*) were chosen as project MIS to represent old-growth associated species and snag dependent species. These species in general prefer high volume old growth with a snag component in them.

Other species are discussed in this document but are not MIS. These species are included in the endemic mammal section.

## Direct Effects

Wildlife models are often used as a planning tool to calculate habitat capability for a variety of species. These models provide relative values that are used to compare habitats and potential impacts among timber harvest alternatives. A model was developed to evaluate potential winter habitat capability for deer (Suring et al. 1993). This model was updated for the 1997 Forest Plan. The model calculates habitat suitability indices (HSI) based on timber volume strata, aspect, elevation, and typical snowfall. HSI values of 1.0 are equal to a 100 deer per square mile to estimate a theoretical number of deer that the habitat may support. These results do not represent actual numbers of deer and are intended for comparison purposes only. The numbers of deer per square mile and the acres of habitat are then compared by alternative. Recommended minimums that account for predation by wolves and human harvest are also part of the comparison.



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The Forest Plan on page 3-367 discusses how the modeling process occurred: As part of the Forest Plan process, a panel of experts was convened to make recommendations on all wildlife analyses. The wildlife specialist for the Forest Plan designed a new HSI model for use in these analyses. The panel of experts made changes to this model to better reflect new information. The model (DeGayner 1996) was presented to the Interagency Deer Habitat Workshop where representatives of the Fish and Wildlife Service, Alaska Department of Fish and Game and other Forest Service Biologists. The participants increased the influence of predators on habitat scores, lowered the habitat values of second growth and increased the maximum carrying capacity estimates. The Forest Plan used a 36 percent reduction in the modeled deer numbers whenever wolves were present to estimate deer numbers for hunters. ADF&G (Person et al. 1997) requested that the Forest Service use 100 deer per mi<sup>2</sup> for the best deer habitat instead of the 125 deer per mi<sup>2</sup> predicted in the model runs and not apply the 36 percent reduction to that figure except for subsistence. This was first discussed in the 2000 Tongass National Forest Annual Monitoring and Evaluation Report released in April 2001. On page 2-155 under recommended changes (amendments) to the Forest Plan analyses or monitoring section, the following was presented:

- Adopt 100 deer per square mile for habitat scores of 1.0, unless project-level data suggest otherwise.
- Use 18 deer per square mile as a guideline for the minimum K (*carrying capacity*) to support hunting and wolves.
- Do not apply the wolf-induced 36 percent reduction to deer habitat scores when estimating deer available to wolves.

Forest Supervisor Forrest Cole gave the following direction on May 25, 2005: ...run the interagency deer model, follow the procedures outlined on page 2-155 in the *Annual Monitoring & Evaluation Report for FY 2000* and Attachment 1, page 1 of the *MOU between the State of Alaska and USDA Forest Service on Coastal Zone Management Act/Alaska Coastal Management Program – Consistency Reviews*. Address any project specific interagency input in the wildlife resource report.

The method of dividing the acres of deer habitat into quarters is simply another way to show the distribution of deer habitat within the area being analyzed so that the effects of the alternatives can be compared. In order to create the maps, the model must be run. The table merely shows the different HSI values used in the model. The factors that determine an area's HSI value are: volume, aspect, elevation, and average winter snow depth. The model is run to produce the maps.

The deer model discloses the amount of habitat in each quartile for the 1954 historic condition, the present condition, and the predicted



reduction as a result of each alternative. The Forest Plan used the quartile method to discuss high value deer winter range (Forest Plan Final EIS Part 1, page 3-369 and footnote 1 page 3-376). The Forest Plan defined the highest 25 percent (4<sup>th</sup> quartile) as high value deer winter range.

## **Sitka Black-tailed Deer (*Odocoileus hemionis sitkensis*)**

The Sitka black-tailed deer was chosen as a MIS because it is an important game and subsistence species and because it is associated with old-growth forests. Sitka black-tailed deer use a variety of habitats throughout the year but the limiting habitat appears to be high quality winter range. High quality winter habitat is defined as low elevation, south facing aspect areas with high volume productive old-growth (POG) and a low amount of snow fall. Winter snow conditions affect the availability of forage for deer, and cause deer to expend extra energy to find food or to avoid predators. This is especially true in areas where recent timber harvest has removed most of the trees. Refer to the Biodiversity section of this chapter for a discussion of the effects of the alternatives on this habitat type. The high volume POG has the combination of a dense canopy with scattered openings that allows forage growth in the openings, while the canopy provides hiding cover and intercepts snowfall sufficiently to allow movement of deer. Early successional stands provide forage for deer during mild winters, and during the remainder of the year.

## **Deer Habitat Capability in the Scratchings Project Area**

The deer habitat capability model developed for the Forest Plan was used to evaluate the quality of deer habitat in the Scratchings project area. This model assigns a Habitat Suitability Index (HSI) to each area of habitat based on the area's average winter snow depths, elevation, aspect, and timber volume strata. The result is a theoretical long-term deer carrying capacity or deer habitat capability based on the area's cumulative HSI values. This number is useful for comparing alternatives, but is not intended to estimate actual deer populations. Table 3W-1 displays the historic and current deer habitat capability in the Scratchings project area. The table shows that deer habitat capability in the project area has been reduced approximately 7 percent as a result of previous timber harvest.

The Scratchings project area deer habitat capability was approximately 40 deer per square mile in 1954 according to the approved Forest Plan Deer Model. The Scratching project area is currently estimated to be able to support an estimated 37 deer per square mile (Table 3W-1). These values were obtained when the deer model was rerun in 2007. The deer model was not rerun as a result of the units or portions of units that were dropped from the Draft EIS Alternative 4 resulting in the Alternative 4 analyzed in the Final EIS. The model was not rerun

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due to the fact that acres were dropped resulting in more habitat remaining in a natural condition and as such would result in a lesser impact to deer populations than what was calculated for Alternative 4 in the Draft EIS.

**Table 3W-1. Deer Density in the Scratchings Project Area (WAA 901)\***

<b>Historic (1954) condition</b>	40 deer/square mile
<b>Current (2007) condition</b>	37 deer/square mile
<b>Change</b>	-7%

\* Based on HSI scores

Table 3W-2 displays the effects of the alternatives on deer habitat capability in the Scratchings project area. The results indicate that the action alternatives would result in a decrease in deer capacity from the current condition in the project area of approximately one percent for all alternatives. The Scratchings project area is approximately 58 square miles in size.

**Table 3W-2. Deer Density in the Scratchings Project Area (WAA 901) by Alternative**

	<b>Alt. 1</b>	<b>Alt. 2</b>	<b>Alt. 3</b>	<b>Alt. 4</b>	<b>Alt. 5</b>
<b>Deer/mile<sup>2</sup></b>	37	37	37	37	37
<b>Change from 2007 condition</b>	0	<1%	<1%	<1%	<1%
<b>Change from 1954 condition*</b>	-7%	-8%	-8%	-8%	-8%

#### **High Value Deer Winter Habitat**

For this analysis the highest value deer winter habitat was identified using a quartile approach similar to that used for the Forest Plan. This method, recommended by a group of Tongass wildlife biologists working on forest-wide wildlife analysis issues, divides all deer winter habitat acres into roughly four equal areas (because HSI values are distributed equally among acres of deer habitat, HSI values are divided as close to four equal area parts as possible). The range of HSI values represented by each quartile depends on the natural distribution of deer winter habitat values in the area being analyzed, using the pre-harvest condition present in 1954. This gives a general indication of the overall habitat quality within the project area.

Table 3W-3 displays the historic (1954) and current acres of HSI quartile 4 in the project area. Quartile 4 represents the high value habitat. The results show that high value deer winter habitat in the project area has been reduced approximately 14 percent since 1954 as

a result of previous timber harvest in the project area. The effects of the alternatives on the remaining acres of Quartile 4, the high value deer winter habitat in the project area, would range from no effect for Alternative 1 to a 6 percent reduction for Alternative 2 (Table 3W-4).

**Table 3W-3. Scratchings Project Area (WAA 901) Deer Habitat Suitability Indices (HSI) – Original (1954) and Current (2007) Condition**

Quartile	HSI Values	1954 Acres	2007 Acres	Percent Change
4*	>.60	8,500	7,298	-14%

\*This quartile is used to represent high value deer winter habitat in the Scratchings Project Area for this analysis.

**Table 3W-4. Scratchings Project Area (WAA 901) Deer Habitat Acres and Percent Change for the 4th Quartile from 1954 Condition by Alternative**

Quartile	4*	% Change for 4 <sup>th</sup> Quartile from 2007	% Change for 4 <sup>th</sup> Quartile from 1954
	Acres		
1954	8,500	0%	0%
2007	7,298	0%	-14%
Alt. 1	7,298	0%	-14%
Alt. 2	6,875	-6%	-20%
Alt. 3	6,952	-5%	-19%
Alt. 4	7,071	-3%	-17%
Alt. 5	7,012	-4%	-18%

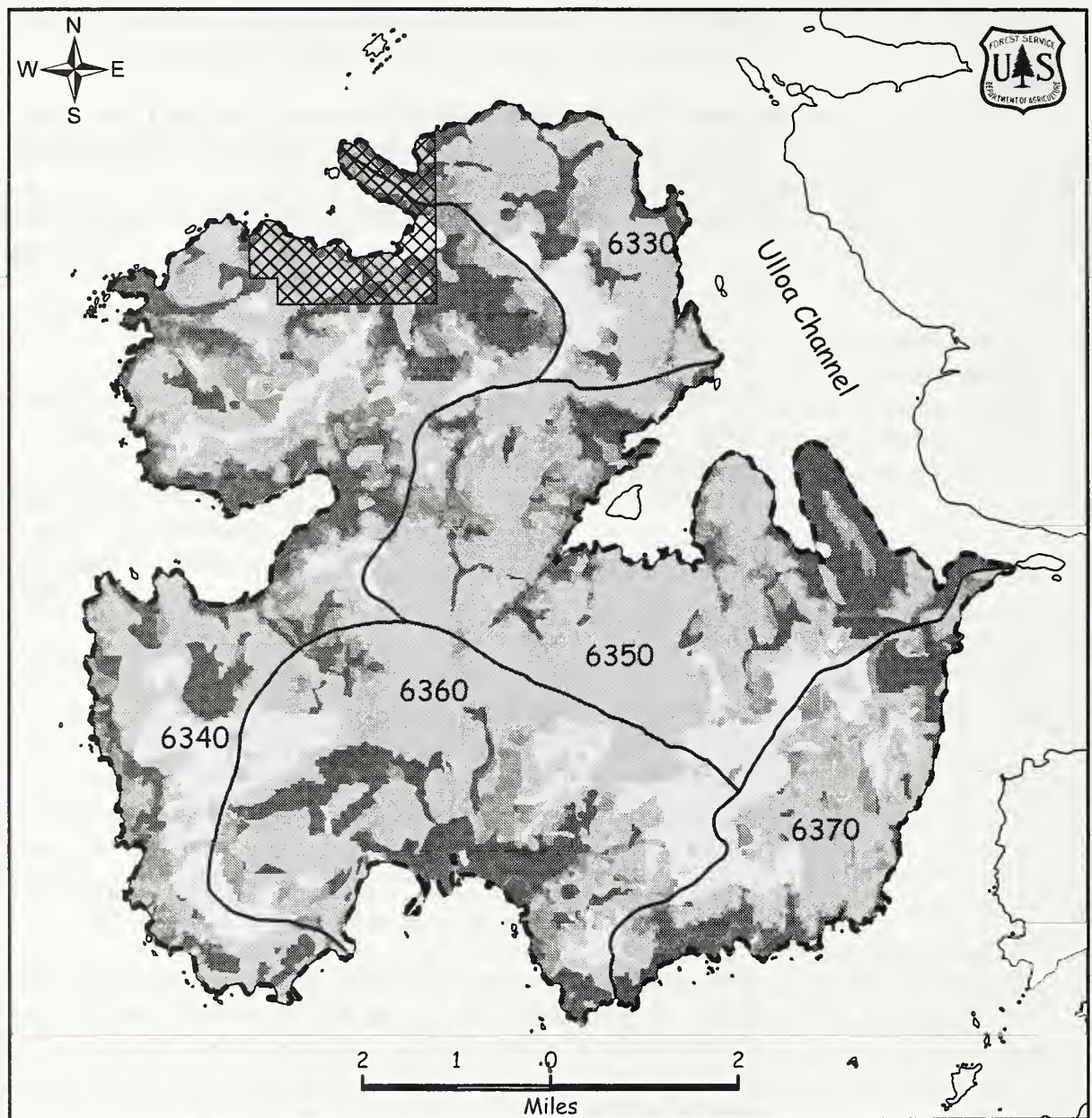
\*The fourth quartile is used to represent high value deer winter habitat in the Scratchings Project Area for this analysis.

Many acres of high value deer winter range will not be harvested on Suemez Island. These acres are included in the beach buffer (around the entire island); stream buffers; and acres within Old-growth Habitat LUD/old-growth reserves (OGRs). High value deer winter range (4<sup>th</sup> quartile) within OGRs for VCU 6330, 6340, 6350, 6370, and the Special Interest Area include as shown in Table 3W-5.

The deer model was not rerun to analyze any modified alternatives. The deer model estimates calculated for the Final Scratchings assumes the “worse case scenario” and any modified alternatives will result in less negative impact to deer than that which was calculated for the Final EIS.



# Scratchings FEIS - Deer Winter Habitat



- Project Boundary
- VCU Boundary
- University of Alaska Land

- Deer Winter Range
- HSI Range 1
- HSI Range 2
- HSI Range 3
- HSI Range 4

Note: This map is compiled from various digital geographic data and may not meet National Map Accuracy Standards.

Figure 3W-1



**Table 3W-5. High Value Deer Winter Range Acres within OGRs**

VCU	Forest Plan Mapped (Alt. 1)	Interagency (Alts. 3, 4, and 5)	Forest Plan Minimum Required (Alt. 2)
	Acres	Acres	Acres
<b>6330</b>	148	144	153
<b>6340</b>	383	643	344
<b>6350</b>	700	905	929
<b>6370</b>	396	446	484
<b>6360*</b>	1,663	1,663	1,663
<b>Total</b>	<b>3,263</b>	<b>3,801</b>	<b>3,573</b>

\*Special Interest Area

### **Alexander Archipelago Wolf**

The Alexander Archipelago wolf, a subspecies of gray wolf, inhabits the mainland and the islands south of Frederick Sound. Wolves use a variety of habitats and can affect prey populations, especially deer. Wolves require an adequate prey base which includes deer, beaver, and salmon. Suitable habitat for wolves equates to habitat areas that are able to support deer. Person et al. (1996) examined the relationships between wolf viability; prey habitat capability; and hunter demand. Person concluded that maintaining an average long-term habitat capability of at least 18 deer per square mile over broad areas using the current deer habitat capability model should be sufficient to both provide for sustainable wolf populations and meet hunter demands for deer. Since wolves tend to have home ranges that cross several wildlife analysis areas, the appropriate scale at which this model is to be applied is the biogeographic province (Tongass Land and Resource Management Plan Implementation Policy Clarification, 1998). The existing deer habitat capability in the entire Southern Outer Island Biogeographic Province is approximately 40 deer per square mile (Table 3W-6); above the 18 deer per square mile threshold. No concern exists for wolves in this area, based on prey habitat capability (pers. comm. with Boyd Porter 2006).

Most of the land in the Southern Outer Island Biogeographic Province is in non-development land use designations. The Biogeographic province that Suemez Island is in also includes Heceta, Lulu, Baker, Noyes, San Fernando, St. Johns, Coronation, Warren and the Murielle Islands. WAA 901 includes all of Suemez Island; WAA 902 is Lulu, Baker, Noyes, St. Johns and San Fernando Islands. WAA 1003 is Heceta Island. Warren Island is WAA 1524 and Coronation Island is WAA 5015. The only islands that have had any kind of harvest activity occur on them are Suemez and Heceta. See Table 3W-6 for deer densities for this Southern Outer Island Biogeographic Province

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by WAA and the change from estimated historic values to current values.

The Tongass National Forest Implementation Clarification policy (TPIT) states that since wolves tend to have home ranges that cross several WAAs the appropriate scale for analysis should be multiple WAAs or the biogeographic province. Table 3W-6 shows the estimated deer densities for the different WAA that make up the Southern Outer Island Biogeographic Province (p. 16).

**Table 3W-6 Deer Densities (deer/mile<sup>2</sup>) for Southern Outer Island Biogeographic Province by WAA**

WAA	1954 (deer/ mile <sup>2</sup> )	1995 (deer/ mile <sup>2</sup> )	% change from 1954	2095 (deer/ mile <sup>2</sup> )	% change from 1954	Total area in the WAA
901	40	37	-7%	37	-8%*	58 mi <sup>2</sup>
902	29	29	0%	29	0%	163 mi <sup>2</sup>
1003	48	35	-27%	24	-50%	68 mi <sup>2</sup>
1524	57	57	0%	57	0%	16 mi <sup>2</sup>
5015	51	51	0%	51	0%	29 mi <sup>2</sup>
	45	42	-12%	40	-12%	334 mi <sup>2</sup>

\* The Scratchings project results in a less than 1% decline in the overall deer numbers for any action alternative.

Source: Information from Appendix 12 to Appendix N of the Forest Plan.

Wolf mortality is also influenced by road density and road access for trappers. Wolf mortality has been shown to increase substantially in WAAs that have an open road density below 1,200 feet in elevation of 0.7 miles per square mile (Person et al. 1996). The current road density for lands below 1,200 feet in WAA 901 is currently about 0.46 miles per square mile. This is the density when considering all National Forest system roads below 1,200 feet. When considering open roads only the density below 1200 feet is only 0.17 miles/mile<sup>2</sup>. Alternative 2, which proposes constructing the most road, will result in a road density of .7 miles per square mile during the timber sale activity. Access to the Suemez Island road system for trapping and hunting is limited because this road system is not connected to any community or any other road system. No concern exists for increased wolf mortality at this scale due to limited road access for trappers. See Table 3W-7 and 3W-8 for road density calculations.

Road densities for wolves are calculated using open National Forest System Roads only. Temporary roads (existing or planned) are not included in this calculation. The road density calculation for wolves only includes open NFS roads below 1,200 feet in elevation.

The current total miles of National Forest System Roads on Suemez Island are about 28 miles. Currently about 6 miles of stored or decommissioned road exist on Suemez Island. The current total open road density, regardless of elevation, for Suemez Island is about 0.49 miles of road per square mile. The current road density when considering the entire Southern Outer Island Biogeographic Province is about 0.3 miles per square mile. This total is calculated based on the total miles of road in the province (91 miles on Heceta) plus the existing roads on Suemez (28 miles). The total miles of road (119 miles) are then divided by the total area of the province (334 square miles). Specific Forest Plan standards and guidelines for wolves are found on pages 4-116 and 4-117 of the Forest Plan.

**Table 3W-7. Projected High Road density miles/mile<sup>2</sup> for the Project Area (WAA 901) by Alternative**

	<b>Below 1200</b>	<b>All Elevations</b>
	<b>All roads</b>	<b>All Roads</b>
<b>Alt 1 (existing)</b>	0.46	0.49
<b>Alt 2</b>	0.67	0.7
<b>Alt 3</b>	0.58	0.62
<b>Alt 4</b>	0.53	0.56
<b>Alt 5</b>	0.55	0.59

**Table 3W-8. Road Density (miles/mile<sup>2</sup>) at the end of the project for Project Area (WAA 901)**

	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>	<b>Alt 5</b>
<b>All open roads</b>	0.49	0.18	0.18	0.18	0.18
<b>Below 1200 feet</b>	0.46	0.17	0.17	0.17	0.17

## **Hairy Woodpecker/Red-breasted Sapsucker/Brown Creeper**

The hairy woodpecker, brown creeper, and the red-breasted sapsucker were chosen as project MIS to represent old-growth associated species and snag dependent species. These species in general prefer high volume old growth with a snag component in them. Red-breasted sapsuckers are also associated with low volume old growth. Hairy woodpeckers and red-breasted sapsuckers are primary cavity excavators. Primary cavity excavators provide nests or dens for other species.

Most woodpecker-excavated holes in snags have been observed in Sitka spruce (Kessler 1979) although hairy woodpecker nests have been found in sound, large diameter (greater than 75 inch DBH) spruce and western hemlock trees. Snags provide hunting perches for hawks and owls, song-posts for a wide variety of birds, and homes for



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mammals such as northern flying squirrels (Quinlan 1982).

The brown creeper is a small bird associated with large, old trees. Large diameter trees are preferred because a bird can feed longer on a large tree and capture more prey per visit. Stands with volumes of 20,000-30,000 board ft. per acre contained approximately one tenth the number of brown creepers observed in stands with volumes greater than 30,000 board feet per acre (Hughes 1985).

Several of these species depend exclusively on cavities in the large diameter snags characteristic of old-growth stands. Brown creepers prefer large diameter trees because a bird can feed longer on a large tree and capture more prey per visit. Habitat for these species is protected in several ways:

- Old-growth reserves
- Old growth in other non-development LUDs and buffers in development LUDs (i.e. RMAs, beach buffers, reserve areas due to soils, and areas left for scenery concerns)

#### **Coarse Canopy Old-growth Habitat**

Four texture designations ranging from fine to coarse were defined by forest characteristics such as crown density, uniformity of canopy, and crown size (Paine 1981). Coarse textured have low crown densities, non-uniform crown sizes and heights, large crowns, and many canopy gaps (Caouette et al p. 15). Certain types of old-growth habitat, particularly low elevation, very high volume stands, are considered to be important to some old-growth and snag (cavity nesting) associated species, such as hairy woodpecker, red-breasted sapsuckers and brown creepers. These areas are represented by Volume Class 6 and 7. Approximately 2,084 acres of coarse canopy habitat existed in the project area prior to large scale timber harvest activities (Table 3W-9). Currently about 1,935 acres of coarse canopy exists in the project area, which is seven percent less than the historic (1954) acres (Table 3W-9). The proposed activities for this project would result in a reduction of the current amount of coarse canopy habitat ranging from no reduction for Alternative 1 to a 10 percent reduction for Alternative 2 (Table 3W-10). All other alternatives would result in about a four percent reduction in the coarse canopy. Cumulative reductions in coarse canopy acres compared to the historic condition would range from seven percent for Alternative 1 to 17 percent for Alternative 2 (Table 3W-10). All other alternatives would result in about an 11 percent total reduction in the coarse canopy on Suemez Island.



**Table 3W-9. Volume Class 6 and 7 (coarse canopy forest) Acres in the Scratchings Project Area (WAA 901)**

<b>Historic (1954) condition</b>	2,084
<b>Current (2007) condition</b>	1,935
<b>Change</b>	- 7%

**Table 3W-10. Volume Class 6 and 7 (coarse canopy forest) Remaining in the Project Area (WAA 901) after Harvest by Alternative**

	<b>Alt. 1</b>	<b>Alt. 2</b>	<b>Alt. 3</b>	<b>Alt. 4</b>	<b>Alt. 5</b>
<b>Acres remaining after harvest</b>	1,935	1,740	1,849	1,855	1,849
<b>Change from current condition</b>	0%	-10%	-4%	-4%	-4%
<b>Change from historic Condition (2,084 ac)</b>	-7%	-17%	-11%	-11%	-11%

### **Endemic Mammals**

Endemic mammals are those species that are restricted to a particular locality, or that may occur on only one or a very few islands. The Forest Plan removed all islands less than 1,000 acres in size from the timber base to specifically address restricted range endemic mammals that may occur only on one or a few isolated islands (Forest Plan FEIS, page 3-411). Removing these islands eliminated risks to habitat loss or alteration from timber harvest. The extended beach fringe and riparian corridors were also expected to provide functional habitat for species with relatively small home ranges. The Forest Plan objective is to conduct surveys for endemic mammals prior to any project that proposes to substantially alter vegetative cover. Surveys are to be conducted for all islands smaller than 50,000 acres. Surveys are also to be conducted on larger islands where a high likelihood exists that endemic mammals are present that might be affected by the project (Forest Plan, pages 4-119 and 4-120). Surveys have been conducted on Suemez Island by the University of Alaska Museum and the Forest Service.

The interagency conservation strategy review document (April 10-14, 2006) indicates that there have been five endemic species identified on Tongass: the Alexander Archipelago wolf, Alaska bat, wolverine, Pacific Coast marten, Haida ermine and Prince of Wales flying squirrel. According to this document the dusky shrew and Island long-tailed vole have been determined not to be endemic. This paper goes on to say that conversion of watersheds to a more managed habitat status will favor the Keen's mouse (p. 54). See the wolf section above for more specific information on that species. The Prince of Wales

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flying squirrel is discussed below. The interagency conservation paper does not have any more discussion the Alaska bat or Haida ermine other than mentioning them the one time. The Pacific coast marten is a priority on Kuiu Island according to this document and the wolverine was mentioned as not being as genetically divergent from wolverines in the interior (p. 56).

Table 3W-11 shows the small mammal trapping data from surveys within and adjacent the project area.

**Table 3W-11. Small mammal trapping numbers from Suemez Island and nearby Islands**

	<b>Flying Squirrel</b>	<b>Marten</b>	<b>Keen's mouse</b>	<b>Dusky Shrew</b>	<b>Long-tailed vole</b>	<b>Wolf</b>	<b>Ermine</b>
POW	104	77	340+	97+	38	106	0
Suemez	25	0*	3+	19+	6+	3**	1
San Fernando	0	0	64	38	0	0	0
Dall	0	0	110+	10+	3+	0	0
Noyes	0	0	15	9	2	0	0
Baker	0	0	4	1	0	0	0
Cone	0	0	8	0	0	0	0
Long	0	0	0		0	0	0
Lulu	0	0	0	3	0	0	0
Forrester	0	0	0	22	0	0	0
St. Ignace	0	0	18	0	0	0	0
Shelikof	0	0	0	2	0	0	0
Sukkwana	0	0	0	4	0	0	0
Total	129	77	562	105	49	109	1

\* ADF&G reports that 21 marten have been taken from Suemez Island.

\*\* ADF&G reports indicate that an additional 31 wolves have been taken from Suemez Island. Data from The Small Mammals of Southeast Alaska 1993 Field Season Interim Report. S.O. MacDonald, J.A. Cook. p. 8 and 9. The University of Alaska 1998 Field Season-Southeast Alaska Table (this is the table that does not give numbers for the Keen's mouse, long-tailed vole or dusky shrew). The Mammal Fauna of Southeast Alaska. S.O. MacDonald and J. A. Cook. 1999. pp. 16-17; 29 - 30; 34-37; 46; 54-55; 58; and 66. USDA Forest Service 1993 trapping information for Cone and Baker Islands.

In the Interagency Conservation Strategy review document (dated April 10-14, 2006) it discusses the level of trapping effort needed for genetic testing. Dr. Cook responded that it varies but that he felt 30 specimens for each distinct population would be adequate (p. 56). As can be seen in the above table, except for the ermine, the number of specimens has been met or exceeded.

## Long-tailed vole

According to the interagency conservation review document the Island long-tailed vole have been determined not to be endemic (p. 54).

## Dusky shrew

According to the interagency conservation review document the Dusky shrew vole have been determined not to be endemic (p. 54).

## Suemez Ermine

The Forest Plan included the Suemez Island ermine (*Mustela erminea seclusa*) as part of the endemic group of mammals for consideration. Suring et al. (1993) rated the vulnerability of the ermine habitat as a low level of concern suggesting only a limited association with the old-growth forest habitat type (Forest Plan FEIS pages 3-413), since ermine use a variety of habitats including forested, brushy and open areas.

The ermine is the most diverse taxon described for Southeast Alaska with 5 endemic subspecies. One of these subspecies is widespread (associated with the coastal mainland) while the others are restricted to particular large islands or island complexes (Phylogeography of endemic ermine (*Mustela erminea*) in Southeast Alaska. M. Fleming and J. Cook. p. 796). Three distinct clades of ermine occur in Southeast Alaska. Two of these lineages, the Beringian and Continental are widely distributed beyond the coastal areas. The Island lineage, which includes the Suemez Island ermine as well as two other subspecies, appears to be more restricted. This lineage has been documented on three islands in southern Southeast Alaska and on Graham Island in British Columbia (Phylogeography of endemic ermine (*Mustela erminea*) in Southeast Alaska. M. Fleming and J. Cook. p.798 -799).

## Marten

American marten do occur on Suemez Island but the forest stand structure standards and guidelines listed in the Forest Plan for marten do not apply on Suemez Island because it is not located within a high risk biogeographic province. Section A1 of the Forest Plan standards and guidelines for marten provides and conserves habitat to assist in maintaining long term sustainable marten populations. These standards and guidelines go on to say that where marten mortality concerns have been identified to:

- a) participate in interagency monitoring;
- b) work with ADF&G to identify probable causes of mortality; where road access has been determined, through analysis to contribute to unsustainable marten mortality implement road closures (see Forest Plan page 4-118 and 119).



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ADF&G has said that marten mortality is not a concern on Suemez Island (per. comm. Boyd Porter Feb.2007). See Table 3W-7 for proposed POG acres harvested for each alternative.

#### **Prince of Wales Flying Squirrel**

The Prince of Wales flying squirrel (*Glaucomys sabrinus griseifrons*) is associated with old-growth forest and is genetically distinguishable from all other flying squirrel populations (Bidlack and Cook, 2001, p. 247). Landscape connectivity is an important factor for flying squirrel viability because this species exhibits limited mobility. The Prince of Wales flying squirrel was part of a group of endemic mammals evaluated for potential risks to viability in the Forest Plan. Among the endemics, it was rated highest as being at risk of not having viable populations maintained over time, largely due to its dependence on unfragmented old-growth forest (Forest Plan FEIS pp. 3-410 to 3-415).

The multiscale old-growth habitat reserve strategy of the Forest Plan was designed to meet the habitat needs of old-growth associated species, including the flying squirrel.

Flying squirrel habitat can be expected to decline in approximately the same proportion as the amount of old-growth forest harvested. Currently, 7 percent of the productive old-growth has been harvested, conveyed or is encumbered on Suemez Island. Under the Scratchings EIS at most an additional 1,479 acres of POG would be harvested (Alternative 2). Alternative 2 would result in a cumulative loss of 13 percent of the 1954 POG. There would still be 19, 907 acres of POG on the island. See Table 3W-6 for proposed POG harvest for each alternative.

#### **Keen's mouse**

The interagency conservation review document says that conversion of watersheds to a more managed habitat status will favor the Keen's mouse (p. 54).

According to The Land Mammal Fauna of Southeast Alaska the Keen's mouse is a common species found throughout Southeast Alaska (p. 578). In the document Phylogeography of Keen's Mouse (*Peromyscus keeni*) in a Naturally Fragmented Landscape on page 1150 and 1154 it mentions the fact that the Keen's mouse is one of Southeast Alaska's most widespread terrestrial mammals. This document goes on to say that the presence of this species in British Columbia seems to indicate that it ranges further inland than previously thought.

Table 3W-12 shows the reduction in productive old growth that has occurred in the project area to date as well as what is expected to occur as a result of the proposed activity. Old-growth associated species

habitat would be expected to decline in approximately the same proportion as the amount of productive old-growth forest harvested as a result of the proposed project.

**Table 3W-12. POG Acres and Percent Change by Alternative**

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
<b>POG 1954*</b>	22,896	22, 896	22, 896	22, 896	22, 896
<b>Past harvest</b>	1,460	1,460	1,460	1,460	1,460
<b>Other</b>	50	50	50	50	50
<b>Total POG remaining</b>	21, 386	21,386	21,386	21,386	21,386
<b>% Change from 1954</b>	-7%	-7%	-7%	-7%	-7%
<b>Proposed POG harvest</b>	0	1,479	955	704	737
<b>2007 POG remaining POG ac</b>	21,386	19,907	20,431	20,682	20,649
<b>2007 change</b>	0	-7%	-4%	-3%	-3%
<b>Total POG harvest**</b>	1,510	2,989	2,465	2,214	2,247
<b>Total % change</b>	-7%	-14%	-11%	-10%	-10%
<b>POG remaining</b>	21,386	19,907	20,431	20,682	20,649

\* All POG values are in acres

\*\* Includes the 50 acres of other

## Alternative 1

### Direct and Indirect Effects

Deer habitat would be slightly reduced from the existing condition as the existing early successional forest matures into the stem exclusion stage. Wolf populations would be expected to decline slightly as a result of the reduction in deer habitat. Old growth associated species such as brown creepers, hairy woodpeckers, red-breasted sapsucker and old growth associated endemics would not lose old-growth habitat areas, except through natural wind and landslide events.

Implementation of this alternative would result in no additional loss of productive old-growth habitat due to management activities. There has

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been about a 7 percent loss of the existing productive old-growth habitat in the project area due to past management activity (Table 3W-12).

Only natural events would affect endemic mammal habitat.

About 28 miles of NFS roads currently exists on Suemez Island. About 6 miles have already been stored bringing the total miles of open road to 22 miles. The total open road density is currently 0.49 miles per square mile and would remain at this level under Alternative 1. The open road density below 1200 feet is currently .46 miles per square mile and would remain at this level under Alternative 1 (Table 3W-7 and 3W-8).

#### **Cumulative Effects**

The scale when considering cumulative effects to wildlife was the entire Suemez Island (WAA 901). Past timber harvest has already affected deer habitat capability in the Scratchings project area. Deer habitat capability has been reduced about seven percent from 1954 conditions (Table 3W-2). Acres of high value deer habitat in the project area have been reduced approximately 14 percent (Table 3W-3 and 3W-4). Acres of coarse canopy habitat in the project area have been reduced approximately 7 percent as a result of past timber harvest (Table 3W-9 and 10). Old growth associated species such as brown creepers, hairy woodpeckers, red-breasted sapsucker and old growth associated endemics habitat would be expected to decline in approximately the same proportion as the amount of old-growth forest that has been harvested due to past activities.

As the existing stands in the Scratchings project area mature, their canopies would close, resulting in loss of forage and reduced habitat values. Some of this reduction in habitat values can be offset through thinning. Refer to the Timber and Vegetation section of this chapter for information on past and future thinning activities in the Scratchings project area.

#### **Alternative 2**

##### **Direct and Indirect Effects**

This alternative would have the greatest effect on deer habitat capability in the Scratchings project area. Deer habitat capability would be reduced less than one percent from the current condition from 37 deer per square mile to 37 deer per square mile (Table 3W-2). Approximately six percent of the high value (HSI quartile 4) deer habitat in the project area is included in proposed timber harvest units (Table 3W-4). Approximately 195 acres of the coarse canopy habitat



in the project area is included in proposed timber harvest units. This alternative would result in a 10 percent reduction in the coarse canopy from the current condition (Table 3W-10).

Implementation of this alternative would result in the loss of approximately 1,479 acres of productive old-growth habitat. This represents approximately a 7 percent loss of the existing productive old-growth habitat in the project area (Table 3W-12). Old growth associated species such as brown creepers, hairy woodpeckers, red-breasted sapsucker and old growth associated endemics habitat would be expected to decline in approximately the same proportion as the amount of old-growth forest that has been harvested as a result of the proposed project (Table 3W-12).

This alternative proposes building about 12 miles of new NFS road which would bring the overall road mileage on Suemez up to about 34 miles. The greatest road density during the time of the timber sale will occur under this alternative. The total road density during the timber sale regardless of elevation will be .7 miles of road per square mile. The total road density during the timber sale for below 1200 feet will be .67 miles per square mile (Table 3W-7). In addition to the 6 miles already stored or decommissioned 11 miles of road are proposed for storage or decommissioning on Suemez Island. All new miles of road would be stored.

## Cumulative Effects

Alternative 2 would have the greatest cumulative effect on deer habitat capability in the project area. Alternative 2 would result in an 8 percent cumulative reduction in the historical deer habitat capability in the project area (Table 3W-2). The cumulative reduction acres of high value deer habitat (HSI quartile 4) would be 20 percent since 1954 (Table 3W-4). The acres of coarse canopy forest in the project area would be reduced approximately 17 percent from the original condition when the effects of Alternative 2 are combined with those of previous timber harvests (Table 3W-10).

The proposed harvest of 1,479 acres of productive old-growth when combined with past harvest activities would result in a cumulative reduction of approximately 14 percent of the historic productive old-growth habitat (Table 3W-12). Old growth associated species such as brown creepers, hairy woodpeckers, red-breasted sapsucker and old growth associated endemics habitat would be expected to decline in approximately the same proportion as the total amount of old-growth forest that has been harvested in the past and as a result of this project (Table 3W-12).

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This alternative proposes building about 12 miles of new NFS road which would bring the overall road mileage on Suemez up to about 34 miles. The final result would be about 10 miles of open road with a density of 0.18 miles per square mile under all action alternatives. The road density below 1200 feet would be about 0.17 miles per square mile (Table 3W-8).

### Alternative 3

#### Direct and Indirect Effects

This alternative would reduce the current deer habitat capability in the project area by less than one percent (Table 3W-2). Approximately five percent of the high value deer habitat acres in the project area are included in proposed timber harvest units in this alternative (Table 3W-4). Approximately 86 acres or four percent of the coarse canopy habitat in the project area is included in proposed timber harvest units (Table 3W-10).

Implementation of this alternative would result in the harvest of approximately 955 acres of productive old-growth habitat. This represents approximately four percent of the existing productive old-growth habitat in the project area (Table 3W-12). Old growth associated species such as brown creepers, hairy woodpeckers, red-breasted sapsucker and old growth associated endemics habitat would be expected to decline in approximately the same proportion as the amount of old-growth forest that has been harvested as a result of the proposed project (Table 3W-12).

This alternative proposes building about 7 miles of new NFS road which would bring the overall road mileage on Suemez up to about 29 miles. The total road density during the timber sale regardless of elevation will be 0.62 miles of road per square mile. The total road density during the timber sale for below 1200 feet will be 0.58 miles per square mile (Table 3W-7). In addition to the 6 miles already stored or decommissioned 11 miles of road are proposed for storage or decommissioning on Suemez Island. All newly constructed roads would also be stored.

#### Cumulative Effects

Alternative 3 would result in an eight percent cumulative reduction in the historical (1954) deer habitat capability in the project area (Table 3W-2). This alternative would result in a cumulative reduction in acres of high value deer habitat of 19 percent compared to the original 1954 condition (Table 3W-4). The acres of coarse canopy forest in the project area would be reduced approximately 11 percent from the original condition when the effects of Alternative 3 (four percent) are

combined with those of previous timber harvests (Table 3W-10).

The proposed harvest of 955 acres of productive old-growth when combined with past harvest activities would result in a cumulative reduction of approximately 11 percent of the productive old growth. Old growth associated species such as brown creepers, hairy woodpeckers, red-breasted sapsucker and old growth associated endemics habitat would be expected to decline in approximately the same proportion as the total amount of old-growth forest that has been harvested in the past and as a result of this project (Table 3W-12).

The final result would be about 10 miles of open road with a density of 0.18 miles per square mile under all action alternatives. The road density below 1200 feet would be about 0.17 miles per square mile (Table 3W-8).

## **Alternative 4**

### **Direct and Indirect Effects**

This alternative would reduce the current deer habitat capability in the Scratchings project area by less than one percent (Table 3W-2).

Approximately three percent of the high value deer habitat acres in the project area are included in proposed timber harvest units in this alternative (Table 3W-4). Approximately four percent of the coarse canopy habitat in the project area is included in proposed timber harvest units (Table 3W-10).

Implementation of this alternative would result in the loss of 704 acres of productive old-growth habitat. This represents approximately three percent of the existing productive old-growth habitat in the project area (Table 3W-12). Old growth associated species such as brown creepers, hairy woodpeckers, red-breasted sapsucker and old growth associated endemics habitat would be expected to decline in approximately the same proportion as the amount of old-growth forest that has been harvested as a result of the proposed project (Table 3W-12).

This alternative proposes building about 4 miles of new NFS road which would bring the overall road mileage on Suemez up to about 28 miles. The total road density during the timber sale regardless of elevation will be 0.56 miles of road per square mile. The total road density during the timber sale for below 1200 feet will be 0.53 miles per square mile (Table 3W-7). In addition to the 6 miles already stored or decommissioned 11 miles of road are proposed for storage or decommissioning on Suemez Island. All newly constructed roads would also be stored.



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#### **Cumulative Effects**

Alternative 4 would result in an eight percent cumulative reduction in the historical deer habitat capability in the project area (Table 3W-2). This alternative would result in a cumulative reduction in acres of high value deer habitat of 17 percent compared to the original condition (Table 3W-4). The acres of coarse canopy forest in the project area would be reduced approximately 11 percent from the original condition when the effects of Alternative 4 (four percent) are combined with those of previous timber harvests (Table 3W-10).

The proposed harvest of 704 acres of productive old-growth when combined with past harvest activities would result in a cumulative reduction of approximately 10 percent of the productive old growth. Old-growth associated endemic and other species habitat would be expected to decline in approximately the same proportion as the total amount of old-growth forest that has been harvested in the past and as a result of this project (Table 3W-12).

The final result would be about 10 miles of open road with a density of 0.18 miles per square mile under all action alternatives. The road density below 1200 feet would be about 0.17 miles per square mile (Table 3W-8).

#### **Alternative 5**

##### **Direct and Indirect Effects**

This alternative would reduce the current deer habitat capability in the Scratchings project area by less than one percent (Table 3W-2). Approximately four percent of the high value deer habitat acres in the project area are included in proposed timber harvest units in this alternative (Table 3W-4). Approximately four percent (86 acres) of the coarse canopy habitat in the project area is included in proposed timber harvest units (Table 3W-10).

Implementation of this alternative would result in the loss of 737 acres of productive old-growth habitat. This represents approximately three percent of the existing productive old-growth habitat in the project area (Table 3W-12). Old-growth associated species, including some endemics habitat would be expected to decline in approximately the same proportion as the amount of productive old-growth forest harvested as a result of the proposed project (Table 3W-12).

This alternative proposes building about 5 miles of new NFS road which would bring the overall road mileage on Suemez up to about 33 miles. The total road density during the timber sale regardless of

elevation will be 0.59 miles of road per square mile. The total road density during the timber sale for below 1200 feet will be .55 miles per square mile (Table 3W-7). In addition to the 6 miles already stored or decommissioned 11 miles of road are proposed for storage or decommissioning on Suemez Island. All newly constructed roads would also be stored.

### **Cumulative Effects**

Alternative 5 would result in an eight percent cumulative reduction in the historical deer habitat capability in the project area (Table 3W-2). This alternative would result in a cumulative reduction in acres of high value deer habitat of 18 percent compared to the original condition (Table 3W-4). The acres of coarse canopy forest in the project area would be reduced approximately 11 percent from the original condition when the effects of Alternative 5 (four percent) are combined with those of previous timber harvests (Table 3W-10).

The proposed harvest of 737 acres of productive old-growth when combined with past harvest activities would result in a cumulative reduction of approximately 10 percent of the productive old growth. Old-growth associated endemic and other species habitat would be expected to decline in approximately the same proportion as the total amount of old-growth forest that has been harvested in the past and as a result of this project (Table 3W-12).

The final result would be about 11 miles of open road with a density of 0.18 miles per square mile under all action alternatives. The road density below 1200 feet would be about 0.17 miles per square mile (Table 3W-8).

### **Overall Cumulative effects**

The Forest Service has no future plans for additional timber sales on Suemez Island. A parcel of land near Port Dolores is owned by the University of Alaska. No activities are planned for the acreage per conversation with Mary Montgomery.

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### **Biodiversity**

Biodiversity is a measure of the variety of all the plant and animal communities and species within an area, including the ecological processes that lead to maintenance of well-distributed viable populations of species. Habitat refers to the environment in which a species lives and thrives. Wildlife species may occupy one distinctive habitat type, a range of different habitats, or may change habitats seasonally. The Tongass National Forest provides habitat for a variety of plant and animal species. The conifer forests of Southeast Alaska are divided into ten forest cover types and 57 plant associations (Forest Plan FEIS Part 1, pages 3-12 and 3-13). Approximately 54 species of mammals, 231 species of birds, and five species of amphibians and reptiles live in Southeast Alaska. An additional 18 species of marine mammals inhabit the offshore marine environment. About 45 other species of birds and three species of amphibians or reptiles are considered casual or accidental visitors to Southeast Alaska (Forest Plan FEIS Part 1, page 3-351). Over 500 species of lichens are found on the Tongass across all habitats (Geiser et al. 1998).

### **Habitat Types in the Scratchings Project Area**

Habitat types found in the Scratchings project area include aquatic; muskegs and wetlands; riparian; second-growth forest; and old-growth forest.

### **Aquatic Habitats**

#### **Estuarine**

Estuaries are formed where freshwater streams enter the sea and include all areas of brackish waters that are influenced by tides. The project area has five large estuaries located around the island. Three estuaries are located in Port Refugio, and one in Port Dolores, one in Port Santa Cruz and one in Arena Cove. Estuarine waters contain aquatic invertebrates and fish, and provide important feeding grounds for some mammals, raptors, shorebirds, gulls, and waterfowl. This total area is relatively small in size but important, because it contributes to the overall species diversity of the project area.

#### **Rivers and Creeks**

Riverine habitat includes all flowing freshwater and is categorized into two types; glacial and non-glacial. No glacial rivers or creeks are located in the project area. Several major non-glacial rivers are included in the project area. Streams form riparian habitat for mammals, birds, and amphibians and provide habitat for fish and aquatic invertebrates.



## **Lakes**

Lacustrine habitat includes lakes and ponds with adjacent marsh habitat. About 56 acres of lakes are located on Suemez Island. None of these lakes are over seven acres in size.

## **Terrestrial Habitats**

### **Muskegs and Wetlands**

Forested wetland comprises most of wetland types within the project area. Non-forested wetlands include areas of muskeg, fens, and emergent short sedge wetlands. Muskeg varies in its composition. Muskeg can be comprised of stunted Mountain hemlock and Lodgepole pine with low-growing shrubs, such as Labrador tea, forbs, sedges and grass species. Muskeg can also be comprised of many small ponds, providing habitat for the early life stages of some insects. These very small ponds provide breeding sites for amphibians and feeding areas for great blue herons and migrating waterfowl.

### **Riparian Habitat**

The area including a stream channel, lake, or estuary bed and the land next to the water is called riparian habitat. This includes not only the forest edge along streams but beaver ponds and sedge meadows. Riparian corridors provide travel and migration pathways for numerous species due to the presence of forage, water, and cover. Riparian habitat has a high value to a variety of species including bald eagles, furbearers, and black bears.

### **Second-growth Forest (managed stands)**

The Scratchings project area includes approximately 1,460 acres of stands previously harvested using mostly a clearcut silvicultural prescription with natural regeneration. These stands vary from sapling to small pole size class and range in age from four to twenty years. Conifer and hardwood seedlings, shrubs, forbs, and grasses sprout immediately after timber harvest. Some songbirds such as the orange crowned warbler, Wilson's warbler, and Swainson's thrush along with several species of small mammals including the long tailed vole use second-growth areas.

An increase in forb and shrub production continues for 25 to 35 years after harvest. Understory vegetation peaks at 15 to 25 years (Alaback 1984). Wildlife species including black bear, moose, long-tailed vole, and Sitka black-tailed deer use these high forage base areas. The canopy closes and most of the herbs and shrubs are shaded out and eliminated from the understory in 25 to 35 years after harvest. Forbs and shrubs would not become established again until about 150 years after harvest without intermediate treatments. The diversity of wildlife

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species remains low for 30 to 150 years after harvest unless the stand has been thinned or pruned (Alaback 1984). About 100 acres of existing managed stands have been thinned in the Scratchings project area. The Timber and Vegetation section of this chapter summarizes the acres of managed stands that are ready for thinning, or would be ready for thinning in the near future. The peak of structural diversity and the growth of the most usable forage for deer occur in stands greater than 200 years old (Alaback 1984).

#### **Late Successional Forest (Old-growth Habitat)**

Old-growth forests are an important component of the temperate rain forest ecosystem of Southeast Alaska. They comprise the majority of the forested areas in the Scratchings project area. Old-growth forests form a landscape pattern comprised of different tree species that vary in form, function, and value to different species of wildlife. Water, disease and wind act as the driving forces behind forest dynamics in Southeast Alaska. The Timber and Vegetation section that follows describes these influences on the growth and development of the old-growth forest habitat type.

#### **Low elevation, High Volume Old-growth Habitat**

Productive old-growth habitat below 800 feet in elevation that is classified as high volume strata is considered to be valuable habitat for many old-growth associated species. This type of old-growth forest is also valuable for commercial timber production. The effects of the proposed timber harvest on this type of habitat in the project area are shown in Table 3B-1. Approximately 7,248 acres of low elevation (below 800 feet), high volume strata forest originally existed in the project area before large scale timber harvest began in 1954. Currently, there are approximately 6,969 acres of this habitat type remaining in the project area, a reduction of approximately four percent of the original acres. The action alternatives for this project would remove from 3 percent to 8 percent of the existing acres of low elevation, high volume strata in the project area. This would result in a cumulative reduction of between 11 to 12 percent of this habitat type since 1954, depending on the alternative selected. Refer to the Old-growth Habitat Fragmentation section of this chapter for information on the effects of the proposed activities on all of the productive old-growth acres in the project area.

**Table 3B-1. Scratchings Project Area Low Elevation (less than 800 feet), High Volume Strata Acres Remaining After Harvest by Alternative**

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
<b>Acres remaining after harvest</b>	6,969	6,404	6,568	6,781	6,666
<b>Change from current condition</b>	0	-8%	-6%	-3%	-4%
<b>Change from historic (1954) condition</b>	-4%	-12%	-10%	-7%	-8%

Approximately 7,248 acres of low elevation, high volume old-growth existed in the project area in 1954.

The acreage in the table above is different than those that show the coarse canopy acres due to the fact that volume class 5 acres are included here and only volume class 6 and 7 are considered when calculating coarse canopy. High volume strata includes volume classes 5, 6 and 7 on non-hydric soils and on hydric soils with slopes greater than 55 percent (Forest Plan p. 3-19).

## Old-growth Forest Habitat Conservation Strategy

The Forest Plan contains a comprehensive conservation strategy to assure viable and well-distributed wildlife populations (Forest Plan FEIS Appendix, Volume 4, Appendix N, 1997). The strategy is based on a system of Small, Medium, Large and Very Large Old-growth Habitat Reserves (OGRs), which make up the Old-growth Habitat land use designations, and other non-development land use designations in a matrix.

The following discussion compares the Forest Plan mapped old-growth reserves and interagency recommendations for OGRs in the Scratchings project area.

## Old-growth Habitat Reserve

An important aspect of the Old-growth Habitat Reserve Strategy is connectivity. The strategy includes small OGRs to provide old-growth forested areas between large and medium OGRs. Connectivity may be provided by combining Small Old-growth Habitat Reserves and other non-development land use designations such as Beach and Estuary Fringe; Riparian Management Areas; and Wilderness.

The Forest Plan anticipated that some of the small OGRs would be adjusted during project level planning to better meet Tongass National Forest criteria and objectives. The Forest Plan established a small OGR in each of the VCUs on Suemez Island except for VCU 6360 which is a Special Interest Area LUD. The size of the Special Interest



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Area allows it to function as a medium OGR, especially when combined with small OGR acres in VCU 6370.

The small OGR as currently mapped in the Forest Plan for VCU 6330 does not meet minimum POG acre requirements. The OGRs in VCUs 6350 and 6370 do not meet minimum total acre requirements. During the Scratchings planning process, a group of interagency biologists met and recommended changes to the existing small OGRs on Suemez Island. See figure 3W-2 for a comparison of the Forest Plan Small OGRs and the Interagency Biologist's Recommendations.

#### **Forest Plan Criteria for Small Old-growth Habitat Reserves**

The Forest Plan (Appendix K) provided guidelines for further evaluating the design of small OGRs at the project level.

Three OGR options have been considered for the Scratchings Final EIS:

1. Forest Plan Mapped OGR – as described in the Tongass Land and Resource Management Plan (Alt. 1)
2. Interagency OGR – outlined by the Forest Service; USFWS; and ADF&G (Alt 3, 4 and 5)
3. Interdisciplinary Team Designed – developed by the Scratchings Interdisciplinary team to meet Forest Plan requirements (Alt 2)

The interagency group of biologists who reviewed the OGRs on Suemez Island concluded that all the small OGRs for this project needed to be redesigned.

#### **VCU 6330 - Small OGR**

VCU 6330 is located on the northeast side of Suemez Island. This VCU is small with only 3,476 acres. The Forest Plan mapped small OGR, in VCU 6330, is 718 acres in size and is basically a wide beach buffer. It is very linear rather than the preferred circular shape. A more linear shape decreases the amount of the interior forest habitat and increases forest edge habitat. The reserve as mapped in the Forest Plan fell short of the 400-acre POG minimum acreage requirements. This reserve only had 359 acres of POG as mapped in the Forest Plan. The Forest Plan OGR contains approximately 148 acres of high volume strata. Goshawk surveys conducted in the area did not identify any goshawk nests within this area. Marbled murrelet at-sea surveys have been conducted in the past around Suemez Island (Craig Ranger District data 1991). The currently mapped Forest Plan OGR would be part of Alternative 1.

The interagency old-growth reserve is more circular in shape and meets the minimum POG acreage requirement with 475 acres. This OGR is 1,100 acres in size overall. This version impacts two originally proposed harvest units. Units 633-021 and 633-097 would no longer be available for timber harvest. Unit 633-021 would have been 75 acres and unit 633-097 would have been 22 acres for a total of 97 acres. The interagency proposed OGR was analyzed under Alternatives 3, 4, and 5.

The minimum standards and guidelines OGR is similar to the currently mapped Forest Plan OGR. POG acres were added to the northern edge of the existing OGR. Most of these POG acres were within the beach buffer. The minimum standards and guidelines OGR is 782 total acres in size with 401 acres of POG. The minimum standards and guidelines OGR was analyzed under Alternative 2.

Table 3B-2 shows the difference in the suitable and available acres located within the different OGR boundaries for VCU 6330. The currently mapped Forest Plan OGR has 107 acres of available timber while the interagency biologist OGR has 320 acres and the minimum standards and guidelines OGR has 109 acres.

The western boundary of this OGR was changed between DEIS and FEIS by bringing the boundary to the existing road. This resulted in about a 20-acre reduction in overall size. Of these 20 acres only one acre was POG.

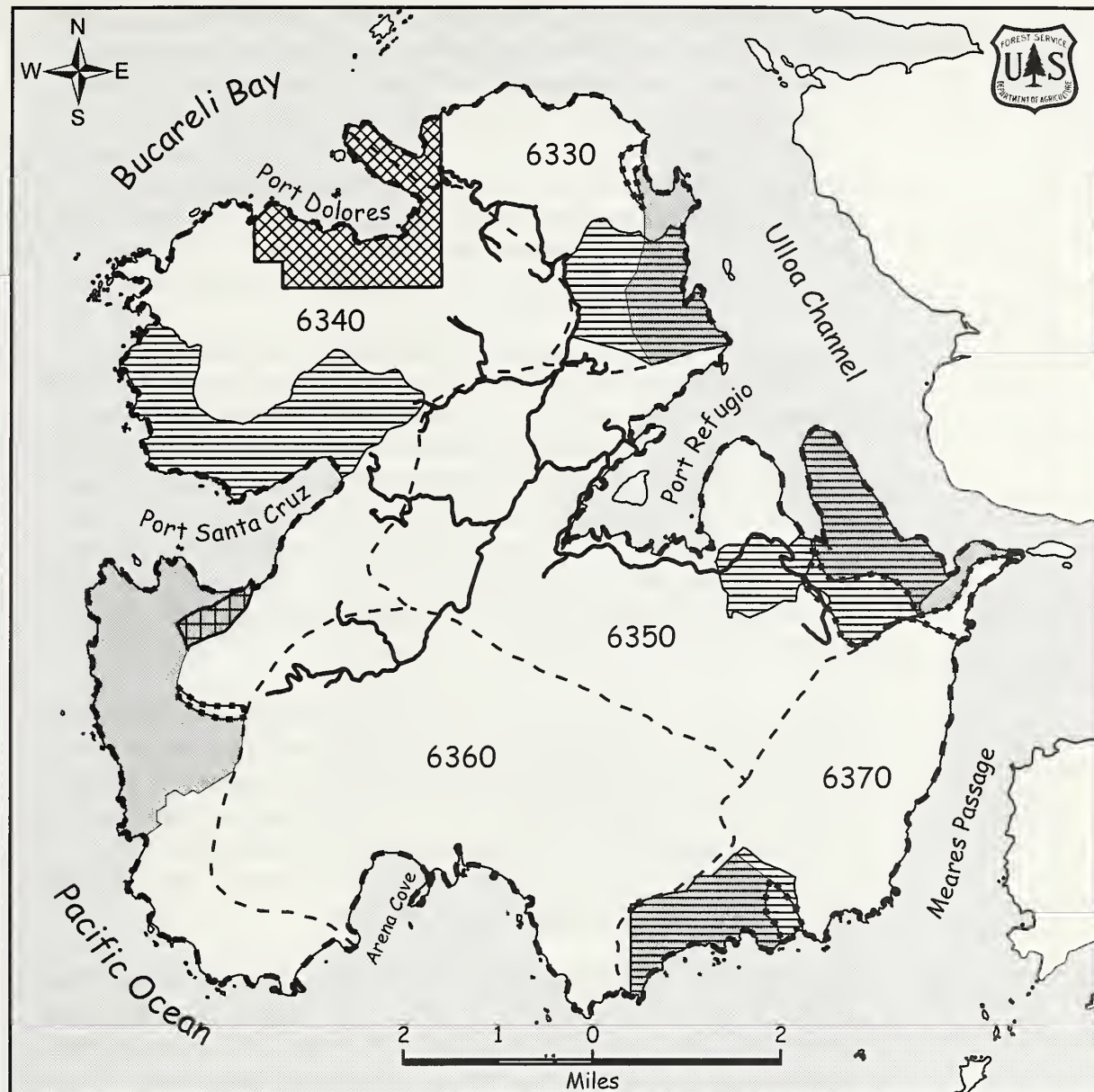
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**Table 3B-3. Small Old-growth Habitat Reserve Options for VCU 6330**

<b>Forest Plan Appendix K criteria for VCU 6330</b>	<b>Forest Plan Mapped (Alt. 1)</b>	<b>Interagency (Alts. 3, 4, and 5)</b>	<b>Forest Plan Minimum Required (Alt. 2)</b>
<b>General Criteria</b>			
Total Acres (should be at least 556 acres)	718	1,100	782
Acres of POG (should be at least 400 acres)	359	475	401
Shape (should be more circular rather than linear)	Linear	Circular	Linear
Acres of early seral habitat included (transitional habitat)	0	0	0
Miles of National Forest System Road included	0	0	0
<b>Site-specific Factors</b>			
High value interior old-growth (acres)	11	11	11
High value deer winter habitat (acres)	148	144	153
High volume strata (acres)	148	162	154
Coarse Canopy Forest (acres)	0	9	0
Contains the largest block of contiguous old-growth within a watershed	No	Yes	No
Known or suspected goshawk nesting habitat	Likely	Likely	Likely
Known or suspected marbled murrelet nesting habitat	Suspected	Suspected	Suspected



# Scratchings Final EIS - Old Growth Habitat LUDs (OGRs)



Project Boundary

Saltwater

University of Alaska Land

VCU Boundary

Existing NFS & Private Roads

## Old Growth Habitat LUDs (OGRs)

Alternative 1  
1997 Forest Plan

Alternatives 3, 4, 5  
Interagency Proposed

Alternative 2 Modified  
1997 Forest Plan

Addition Deletion

Note: This map is compiled from various digital geographic data and may not meet National Map Accuracy Standards.

Figure 3W-2

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#### **VCU 6340 - Small OGR**

VCU 6340 is 10,742 acres in size. This VCU is all Forest Service; there are no acres of other ownership within the VCU boundary. This VCU is located on the west side of Suemez Island. The Forest Plan mapped Old-growth Reserve in VCU 6340 is located south of Port Santa Cruz. The Forest Plan calls for at least 1,719 acres for the reserve of which at least 859 acres must be POG. This reserve was 2,038 acres in size with 950 acres being POG as it was originally mapped in the Forest Plan. The reserve, as mapped in the Forest Plan, meets the acreage requirements for both total acres and POG acres. The Forest Plan mapped OGR would apply under Alternative 1.

Interagency biologists recommend moving the Small Old-growth Reserve to the north side of Port Santa Cruz. The recommended OGR contains more high quality deer winter range (low elevation south facing slopes). Their recommendation also contains one of the largest remaining blocks of contiguous old-growth within a watershed. The total acreage for this small reserve is 1,833 acres with 1,434 acres of POG. An additional 1,330 acres in this VCU are part of the mapped Special Interest Area on the island. A total of 3,163 acres in this VCU are in a non-development LUD. The interagency proposed OGR would apply under Alternatives 3, 4, and 5.

Timber harvest units in the interagency OGR were not considered for this project. Most of these units were located along the north side of Port Santa Cruz. This area contains mostly low volume strata timber on steep slopes. Building a road into this area to access timber was unlikely. Original units included 634-022, 634-023, and 634-048 through 634-058. These units had a total of 717 acres. They have not been included in any of the action alternatives.

The minimum standards and guidelines OGR is similar to the currently mapped Forest Plan OGR. This version of the OGR is located in south Santa Cruz. The Forest Plan mapped OGR in this VCU exceeded the requirements in both total acreage and POG acres. Acres were removed from the currently mapped OGR and the OGR was reduced in size in the minimum version. The minimum standards and guidelines version is 1,845 acres in size with 863 acres of POG. This version would not impact any proposed timber harvest units in this area. The minimum standards and guidelines OGR would apply under Alternative 2 only.

Table 3B-4 shows the difference in the suitable and available acres located within the different OGR boundaries for VCU 6340. The currently mapped Forest Plan OGR has 298 acres of available timber while the interagency biologist OGR has 809 acres and the minimum

standards and guidelines OGR has 279 acres.

**Table 3B-4. Small Old-growth Habitat Reserve Options for VCU 6340**

<b>Forest Plan Appendix K criteria for VCU 6340</b>	<b>Forest Plan Mapped (Alt. 1)</b>	<b>Interagency (Alts. 3, 4, and 5)</b>	<b>Forest Plan Minimum Required (Alt. 2)</b>
<b>General Criteria</b>			
Total Acres (should be at least 1,719 acres)	2,038	1,833	1,845
Acres of POG (should be at least 859 acres)	950	1,434	863
Shape (should be more circular rather than linear)	Linear	Linear	Linear
Acres of early seral habitat included (transitional habitat)	0	0	26
Miles of National Forest System Road included	0	0	0.1
<b>Site-specific Factors</b>			
High value interior old-growth (acres)	206	374	200
High value deer winter habitat (acres)	383	643	344
High volume strata (acres)	362	493	330
Coarse Canopy Forest (acres)	0	102	91
Contains the largest block of contiguous old-growth within a watershed	No	Yes	Yes
Known or suspected goshawk nesting habitat	Likely	Likely	Likely
Known or suspected marbled murrelet nesting habitat	Suspected	Suspected	Suspected

## VCU 6350 - Small OGR

VCU 6350 is 9,100 acres in size and surrounds Port Refugio. This small old-growth reserve is 917 total acres with 857 of that being POG as mapped in the Forest Plan. This OGR contained enough POG acres. The total size of this OGR was 539 acres short of the recommended total acreage. The Forest Plan OGR does not include the buffers around known goshawk nests.

The interagency biologists preferred option for this VCU includes the four known goshawk nest buffers. This option also maintains a wildlife corridor to the south. The overall size of the interagency biologists reserve is 1,589 acres in size with 1,247 acres of POG. This



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results in the old-growth reserve being over the recommended total acres and POG acres. An additional 603 acres of this VCU are included in the Special Interest Area. Potential units in this old-growth reserve include 635-088, 635-089, 635-090, and 635-091. These four units have a combined acreage of 230 acres. These units have been either dropped or deferred at this time.

The minimum standards and guidelines OGR in this VCU would keep the Forest Plan mapped version but would also include some acres from the northeast corner of the portion of VCU 6370 that is on Suemez Island. The minimum standards and guidelines OGR is 1,326 acres in size and includes 1,201 acres of POG. This OGR would also include additional acres to the west of the existing boundary in VCU 6350. The minimum OGR has a road along most of the western boundary. This road has had several bridges pulled along it and is no longer connected to the rest of the road system on Suemez Island. This version would be included in Alternative 2 only.

Table 3B-5 shows the difference in the suitable and available acres located within the different OGR boundaries for VCU 6350. The currently mapped Forest Plan OGR has 326 acres of available timber while the interagency biologist OGR has 559 acres. The minimum standards and guidelines OGR has 645 acres.

**Table 3B -5. Small Old-growth Habitat Reserve Options for VCU 6350**

<b>Forest Plan Appendix K criteria for VCU 6350</b>	<b>Forest Plan Mapped (Alt. 1)</b>	<b>Interagency (Alts. 3, 4, and 5)</b>	<b>Forest Plan Minimum Required (Alt. 2)</b>
<b>General Criteria</b>			
Total Acres (should be at least 1,456 acres)	917	1,589	1,326
Acres of POG (should be at least 728 acres)	857	1,247	1,201
Shape (should be more circular rather than linear)	Linear	Triangular	Triangular
Acres of early seral habitat included (transitional habitat)	12	99	39
Miles of National Forest System Road included	0	0.4	1.52
<b>Site-specific Factors</b>			
High value interior old-growth (acres)	511	633	693
High value deer winter habitat (acres)	700	905	929
High volume strata (acres)	791	1,016	1,038
Coarse Canopy Forest (acres)	0	0	0
Contains the largest block of contiguous old-growth within a watershed	Yes	Yes	Yes
Known or suspected goshawk nesting habitat	Likely	Known	Likely
Known or suspected marbled murrelet nesting habitat	Suspected	Suspected	Suspected

### **VCU 6360 – Special Interest Area**

No changes were made to this VCU. All of this VCU is a mapped Special Interest Area (SIA). The size of the SIA and location (adjacent to the small OGRs in VCUs 6340 and 6370) allows it to function on the landscape as a medium sized OGR on Suemez Island; however it is still mapped as a SIA.

### **VCU 6370 - Small OGR**

This VCU is located on the southwest side of Suemez Island and is 5,946 acres in size. A portion of this VCU is located on the northern end of Dall Island. This old-growth reserve was short of total acres as mapped in Forest Plan. This VCU should have a reserve containing at

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least 951 acres total and 476 acres of POG according to the Forest Plan, Appendix L to Appendix N. This OGR was 858 acres in size with 858 acres of POG as mapped. The OGR in this VCU did not meet the minimum total acreage requirements but exceeded the necessary POG acres. This OGR is adjacent a Special Interest Area and would not need to be enlarged. Minimal changes were made to this OGR by the interagency team. Recommended changes incorporated natural features including streams and ridgetops and moved boundaries to features that could be located in the field.

Interagency biologists recommended minimal changes to the OGR in this VCU. The biologists' recommendations include adding acres on the east side of this OGR. The interagency biologist's OGR in this VCU is 895 acres in size with 799 acres being POG. Very little non-POG exists in the portion of this VCU located on Suemez Island which accounts for the high percentage of POG in the total acres. This location meets the intent of the Forest Plan criteria by reserving the largest contiguous block of POG, and by protecting high value deer winter range (low elevation, south facing slopes). Approximately 255 acres in this VCU are included in the Special Interest Area in addition to the small OGR. The total acres in this VCU that are non-development LUD are 1,150 acres.

The minimum standards and guidelines OGR in VCU 6370 is similar to the Forest Plan mapped OGR. Additional acres were added to the OGR along the north and west boundaries to meet acreage requirements. The total acreage for this OGR is 995 with 956 acres of POG.

Table 3B-6 shows the difference in suitable and available acres located within different OGR boundaries for VCU 6370. The currently mapped Forest Plan OGR has 369 acres of available timber while the interagency biologist OGR has 491 acres. The minimum standards and guidelines OGR has 417 acres.



**Table 3B-6. Small Old-growth Habitat Reserve Options for VCU 6370**

<b>Forest Plan Appendix K criteria for VCU 6370</b>	<b>Forest Plan Mapped (Alt. 1)</b>	<b>Interagency (Alts. 3, 4, and 5)</b>	<b>Forest Plan Minimum Required (Alt. 2)</b>
<b>General Criteria</b>			
Total Acres (should be at least 951 acres)	858	895	995
Acres of POG (should be at least 476 acres)	858	799	956
Shape (should be more circular rather than linear)	Square	Square	Square
Acres of early seral habitat included (transitional habitat)	0	0	0
Miles of National Forest System Road included	0	0	0
<b>Site-specific Factors</b>			
High value interior old-growth (acres)	301	344	367
High value deer winter habitat (acres)	396	446	484
High volume strata (acres)	299	327	346
Coarse Canopy Forest (acres)	49	49	49
Contains the largest block of contiguous old-growth within a watershed	Yes	Yes	Yes
Known or suspected goshawk nesting habitat	Likely	Likely	Likely
Known or suspected marbled murrelet nesting habitat	Suspected	Suspected	Suspected

### **Landscape Connectivity between Old-growth Habitat Reserves**

Landscape connectivity between large and medium OGRs is a Forest Plan standard and guideline. No mapped large or medium old-growth reserves are located on Suemez Island. Productive old-growth forests occurring within non development LUDs, beach fringe and riparian buffers contribute to overall landscape connectivity. The placement of Small Old-growth Habitat Reserves is an important consideration in evaluating habitat connectivity. All of these factors contribute to the connectivity of the small reserves and other non-development LUDs.

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See the Connectivity portion of the Old Growth Habitat Fragmentation Section (this chapter).

#### Effects of the Alternatives

The analysis of effects on biodiversity for the Scratchings project area focuses mainly on the effects of the alternatives on old-growth forest habitat. The Wetlands section of this chapter discusses the effects of the proposed activities on the wetland habitat type. Other habitat types are not expected to be affected by this project. Table 3B-7 displays the effect the alternatives have on Small Old-growth Reserves. Alternative 1 and Forest Plan OGRs represent the existing condition.

**Table 3B-7 – Acres of Harvest in Small OGR**

Alternatives	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Interagency Option	0	0	0	0	0
Forest Plan	0	12*	12*	0	0

\*Western portion of Unit 634-111

Twelve acres of harvest do not occur within the OGR boundary for VCU 6330 as currently mapped in the Forest Plan. The twelve acres are located outside the OGR boundary and could be harvested under Alternative 2. The interagency biologists OGR would impact the 12 acres of harvest in all other alternatives. Total acres available are shown in Table 3B-8.

**Table 3B-8. Difference in Suitable and Available Timber Acres by OGR**

Total acres of Suitable and Available Timber included in OGR boundary	
Forest Plan OGR (Alt. 1)	1,100
Minimum S&G OGR (Alt. 2)	1,425
Biologists OGR (Alts. 3-5)	2,179

## Old-growth Habitat Fragmentation

Suemez Island is located within the Dall-Outside Complex ecological subsection of Southeast Alaska. This area includes Dall, Noyes, Baker, Long and Suemez Islands. The resulting forest is moderately productive (Nowacki et al. 2001 p. 96). The old-growth forest habitat within the Scratchings project area occurs in landscape patterns of old-growth forest, muskeg, and forested wetlands.

Past timber harvest activities have resulted in fragmentation within some of the old-growth habitat areas. Fragmentation can occur naturally where non-forest and forested areas intermix. Too much fragmentation could make an area unsuitable for some species in the short term, and could affect the ability of some species to travel between the remaining areas of old-growth habitat. Interior old-growth habitat is considered to be the most stable and suitable habitat for some old-growth associated species. Interior old-growth habitat patches are those areas buffered from outside influences by their edges. Timber harvest tends to increase the proportion of edge habitat relative to the amount of interior habitat. The Scratchings project area analysis addresses this issue by comparing the effects of the alternatives on the amount of productive old-growth in the project area, and on the amount, distribution and quality of the interior old-growth habitat patches in the project area.

## Landscape Connectivity

The 1997 Forest Plan Final EIS contains a comprehensive two-part conservation strategy to maintain viable and well-distributed populations of species associated with old growth forests (Forest Plan FEIS 3-382). This strategy, in addition to the application of the Forest Plan Standards and Guidelines, is integral to protecting and providing habitat to maintain viable fish and wild life populations that are required under the National Forest Practices Act (NFMA). The underlying assumption is that the maintenance of functioning ecosystems, achieved by protecting large, interconnected blocks of habitat, would conserve the species associated with them. See the Biodiversity section of Chapter 3 for more information.

The matrix component of the old growth conservation strategy maintains natural diversity for non-migratory species, provides important connectivity between Old-growth Habitat LUD/OGRs and other patches of old growth, and promotes genetic mixing among populations that are unlikely to cross large areas of non-forest or second growth. In addition, old growth patches sometimes serve as the only habitat in a landscape for many lichens, fungi, bryophytes, plants and small animals.

Corridors can function in different ways, depending on width and



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other characteristics. Some “interior species” (species that do not inhabit the outer edges of old growth forests) will not live or even migrate through extensive lengths of unsuitable habitat (Forman and Godron 1981). Habitat corridors can also minimize isolation and decline of wildlife species associated with the old growth blocks (Harris 1984, Hunter 1990). The Forest Plan direction for habitat connectivity at the project level is to assess whether blocks of contiguous old growth forest habitat are maintained between large and medium reserves and other natural setting LUDs (Forest Plan 4-120). OGRs, riparian areas, beach/estuary buffers and other areas (including stands deemed inoperable for timber harvest because of unstable soils, steep slopes, economic isolation or other factors) contribute to connectivity between old growth blocks.

#### **Fragmentation in the Scratchings Project Area**

The Scratchings project area lies within the Southern Outer Island Biogeographic Province (Forest Plan FEIS Part 1, pages 3-14 and 3-15). This province contains 215,278 acres on Forest Service System land. About 54 percent of this province or 115,487 acres are productive old-growth (POG). About 90,053 acres of POG is in reserves. About 42 percent or 37,822 acres of these acres are high volume POG. The estimated acreage of POG present in this biogeographic province in 1954 was 128,782 acres. About 64,391 acres or 50 percent of the total POG acres were high volume POG acres in 1954 (Appendix 8 to Appendix N). Only 10 percent (13,295 acres) of the total productive old-growth is estimated to have been harvested as of 1997 (Forest Plan) in this biogeographic province. There is an estimated 115,487 acres of POG remaining in the province. The Forest Plan calculated that that an estimated 78 percent of the 1995 POG (90,053 acres) is in reserves (Appendix 3 to Appendix N).

The patch size analysis was not rerun between the Draft EIS and the Final EIS. The “worse case scenario” was run for the Draft EIS and the effects analyzed here show a greater impact than what is anticipated to actually occur on the ground.

**Table 3OG-1. Scratchings Project Area Patch Size Changes**

Patch Size*	1954			2005		
	Number of patches	Total acres	Average patch size (acres)	Number of patches	Total acres	Average patch size (acres)
Greater than 1,000 acres	6	34,329	5,722	6	29,987	4,998
500-1,000 acres	0	0	0	0	0	0
15-500 acres	29	1,993	69	32	2,233	69
Less than 15 acres	36	283	8	44	303	7

\*Includes a total acreage, interior plus edge.

The sizes and shapes of the original blocks of productive old-growth are important. Large areas of POG may contain little or no interior habitat if their shapes are linear and they do not exceed 600 feet in width. A 30-acre block of old-growth that is generally circular in shape could have little or no interior habitat when a 300-foot buffer is applied. The location of a harvest unit relative to the edge of a patch also determines the extent of the effects. A unit on the edge of a patch may have less impact on the patch than a unit located in the interior of the patch.

**Table 3OG-2. Scratchings Project Area Interior Productive Old-growth Habitat Patches**

	Historic (1954) Condition	Existing (2007) Condition	Percent change
Productive Old-growth acres	22,896	21,836	-7%
Interior Old-growth Habitat patch acres	13,750	11,712	-15%

The proposed activities for this project would reduce the amount of interior old-growth habitat in the project area, as displayed in Table 3OG-5. Between 10 and 21 percent of the existing interior old-growth habitat acres in the project area could be harvested with implementation of one of the action alternatives. This would result in a cumulative reduction of the historic interior old-growth habitat acres in the project area of between 23 and 33 percent, depending on the alternative selected.

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**Table 3OG-3. Estimated Change in Acres of Interior Productive Old-growth Habitat in the Scratchings Project Area**

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Interior Old-growth Habitat acres remaining after harvest	11,712	9,296	10,201	10,307	10,565
Change from current condition	0%	-21%	-13%	-12%	-10%
Change from historic (1954) condition	-15%	-33%	-26%	-25%	-23%

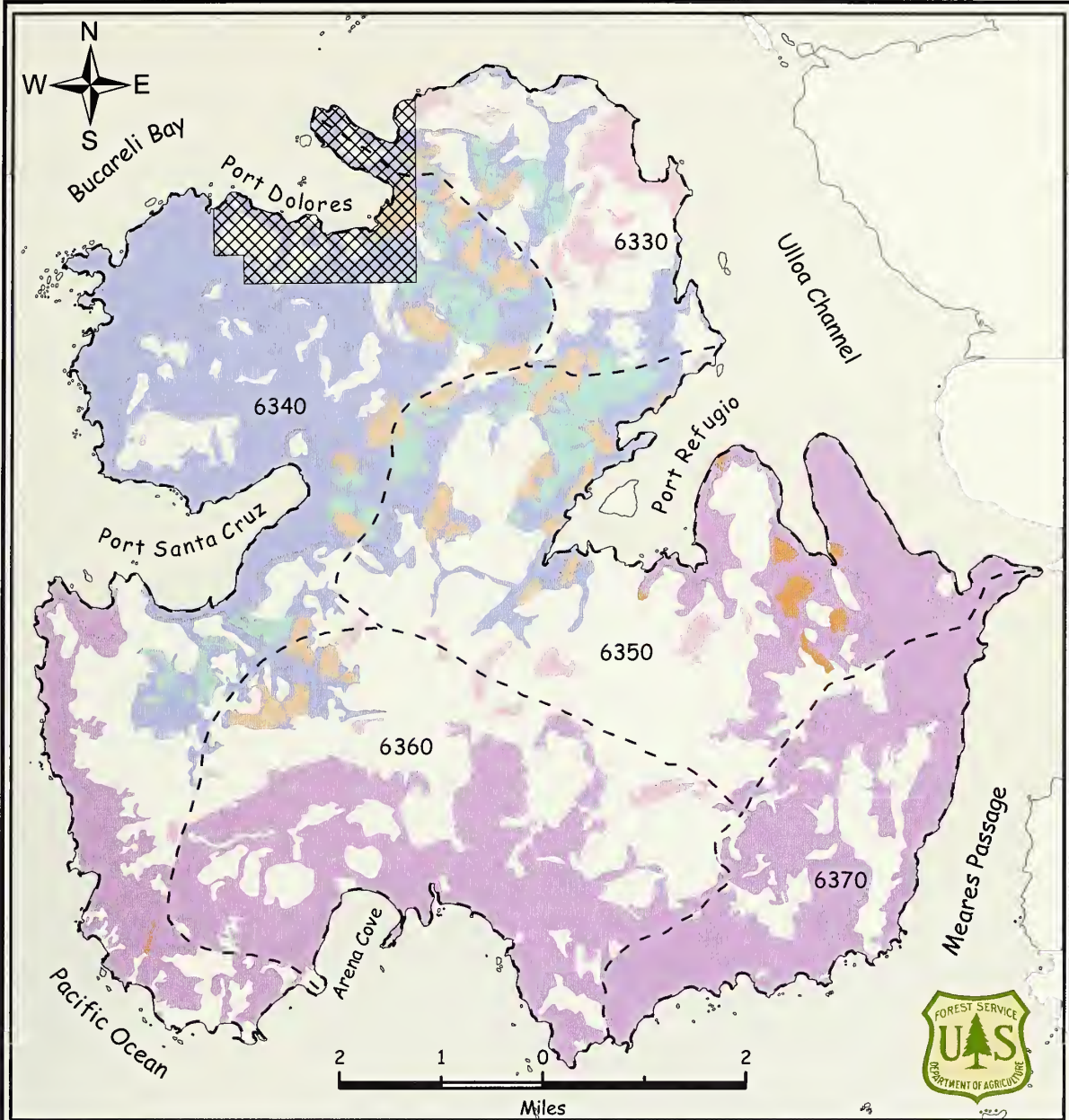
**Old-growth Habitat Patches greater than 10,000 acres in size**


A combination of physical and biological characteristics determines the overall quality of the interior old-growth habitat patches. The five key characteristics used to identify high value interior old-growth habitat patches in the Scratchings project area are: size; proximity to the closest neighboring patch; elevation; timber volume strata; and average winter snow levels. The following assumptions about these criteria were used to evaluate the existing patches in the project area:


- Larger patches have greater value than smaller patches.
- The greater the distance between patches, the less opportunity wildlife have to move between patches, especially for small wildlife.
- Low elevation habitat (less than 1,500 ft) is more valuable than higher elevation habitat, with habitat below 800 feet in elevation being the most valuable.
- Higher volume strata habitat is more valuable than lower volume strata habitat.
- Areas with lower average snow depths in winter are more valuable than areas with higher average winter snow depths as critical winter range for some species.





# Scratchings Final EIS - POG Patches




 Saltwater


 Project Boundary

 VCU Boundary


 University of Alaska Lands

 POG Not Within Patch No. 1 or 2


## POG Patch No. 1

 1954 Condition

 Managed Stands 1954 - 2005

 Alternative 3 Proposed Units

## POG Patch No. 2

 1954 Condition


 Managed Stands 1954 - 2005



Figure 30G-1

Note: This map is compiled from various digital geographic data and may not meet National Map Accuracy Standards.



Two old-growth habitat patches of greater than 10,000 acres existed in the project area in 1954. These two patches totaled 21,944 acres. The northern patch, labeled Patch #1, was originally 10,813 acres in size (Figure 3OG-1). The southern patch, Patch #2, was 11,131 acres in size. The two patches totaled 20,495 acres (down seven percent) in 2005. Patch #1 is currently 9,538 acres in size. Past harvest activity in this patch was concentrated in the eastern most portion of the patch. Most of the rest of the harvest activity was around the edges of this large patch. Patch #1 would be further reduced in size by the proposed timber harvest for this project. Patch #2 has decreased in size to 10,959 acres. The only harvest activity in Patch #2 has been five old harvest units in the Bocas Bay area, on the south side of Port Refugio. No activity is planned for any portion of Patch #2 in the Scratchings project area.

**Table 3OG-4. Effects of the Alternatives on the Old-growth Habitat Patches greater than 10,000 acres**

Patch	1954 Acres	2007 Acres	Acres Remaining				
			Alt. 1	Alt. 2	Alt. 3	Alt.4	Alt. 5
#1	10,813	9,538	9,538	7,696	8,228	8,412	8,578
#2	11,131	10,959	10,959	10,959	10,959	10,959	10,959

### **Wildlife Travel Corridors between Old-growth Habitat Patches**

Providing wildlife travel corridors does not necessarily mean that old-growth habitat areas need to be physically joined for all species. Many old-growth associated species across the Tongass can move or be carried across areas not in old-growth conditions (Forest Plan FEIS Part 1, pages 3-33). The Forest Plan also recognized that corridors may be the only link between habitats and need to function as breeding habitat for species with limited dispersal capabilities, such as lichens, fungi, mosses, plants, and small-bodied animals. Wider corridors are considered to be more effective at facilitating species movements. A functioning corridor should be continuous and maintain a minimum width along its entire length. The corridor must also contain suitable habitat for the species that are expected to move within it. Several of the corridors that now link the key patches were historically part of the interior habitat, especially along the western portion of VCU 6340 and the Bocas Bay area of VCU 6350. Past harvest and road building have fragmented these areas, creating openings and small patches of old-growth edge habitat in place of interior habitat. These patches of old-growth edge habitat now serve primarily as corridors between the remaining key patches of interior forest. Some buffered stream corridors also serve as connecting corridors. Many of these buffers are low elevation (less than 800 feet), and include high volume old-growth



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forest. An area becomes very valuable habitat for wildlife such as goshawk and brown creeper when it is located at low elevation and contains high volume old-growth.

The Forest Plan has identified stream buffers as corridors between habitat patches. Minimum corridor width along a fish stream is identified in the Forest Plan as 200-feet (100-feet on either side of the stream). Any corridor reduced below 200-feet at its narrowest point is excluded from consideration as a functioning corridor for this analysis using this guideline. Some of the links, or corridors, between the two key interior old-growth habitat patches in the project area would be affected by the proposed timber harvest in all of the action alternatives.

Travel corridors throughout VCUs 6330, 6340, and 6350 has been reduced by past management activities that have fragmented the landscape. The habitat corridors in VCUs 6360 and 6370 are intact and has not been fragmented by any human caused activities.

VCU 6330 is a small VCU of only 3,476 acres. There are three old clear cuts in this VCU that were harvested in the mid to late 1980s. This VCU currently has three planned units in it for the Scratchings project. The only corridor concern in this VCU is between the two branches of the major stream in the northern portion of the VCU (the North Watershed). There is an old cut located here as well as two of the three planned units.

VCU 6340 is 11,714 acres in size and has eleven old clear cuts units in it. These units were harvested between 1994 and 1995. The Port Dolores Watershed within this VCU is the one that has the most concerns in it from a corridor standpoint. There are two old units, harvested in 1986, in the watershed and planned units. The planned Units 634-040 through -047 as well as the helicopter portion of Unit 634-005 are not included in Alternative 3, were deferred for the Final EIS Alternative 4 and not included in Alternative 5. Due to these units not being included or deferred from Alternatives 3, 4 and 5 as well as the unit design changes between Draft and Final, and the silviculture prescriptions for the units remaining in this watershed the concerns for the corridors in this area have been addressed. The remaining access is at the extreme southeastern end of the main stream and potentially through the old units. These units are about 20 years old and while they probably do not provide much in the way of forage availability they should be approaching the stage where access through them is not as difficult. The tributary to the west of the main stream has one old unit, harvested in 1995, along it and five planned units. The majority of the access along this stream will be lost as well. Here the older stand is only 10 years old and should provide more in the way of

forage availability rather than travel accessibility. Alternative 4 designed more specifically around watershed concerns in the Dolores watershed, addresses the wildlife travel corridor concern as well. By not harvesting as many units or constructing as much road as other alternatives in the Dolores watershed alternative 4 alleviates most of the wildlife travel corridor concerns in this area.

The eastern portion of this VCU that wraps around Port Santa Cruz has had very little impact. The northwest portion of the VCU has not had any previous harvest. The units planned for this area under the Scratchings project are relatively spread out and so corridors are not a concern. The portion of this VCU on the east side of Santa Cruz, the Santa Cruz Watershed, has had some previous activity in it. There are three previously harvested units and four planned units in this part of the VCU. The south side of the main stream in the Santa Cruz Watershed is the most heavily impacted. Accessibility along this stream will be from the extreme western end, the northern side of the stream or along the beach fringe. The last part of this VCU is along the south side of Port Santa Cruz. There are five old clear cuts in the West Watershed and one planned unit. The old and planned units are relatively spread out here as well and corridors in this area are not a concern.

VCU 6350 wraps around Port Refugio. This VCU is 9,046 acres in size. The northern part of this VCU has been previously harvested. There are twelve old clearcuts and eight new ones planned for this area. The Waterfall Watershed has four units along the northern side of the main stream. Two of the four units are old and two are planned. To the south of this stream (actually another watershed) are two more units, one old and one planned. The old units were harvested in 1986 and should by this time be relatively easy to travel through. There is also access from the west end of the main stream. A portion of one of the old units is located within the beach buffer. The southeastern part of this VCU has several old clear cuts. The East Watershed, the watershed with the four known goshawk nests, has two clearcuts in it and the area just to the east has three more old units. Most of these units were harvested in 1995, although one is dated 1961. The 1961 unit is located within the beach buffer. Corridors through this area are not a concern as the old units are spread out and there are no new units planned for this area at this time.

As mentioned above, VCUs 6360 and 6370 have not been impacted by any past activity and all fragmentation is that which naturally occurs on the landscape.

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#### Effects of the Alternatives

##### Direct and Indirect Effects

###### Alternative 1 (No-action, Existing Condition)

Implementation of this alternative would not result in reductions of productive old-growth habitat or additional old-growth habitat fragmentation because of timber harvest or road building activities. The reduction in POG acres would remain at a seven percent loss due to past activities.

Existing patch sizes and distribution would remain the same. The interior habitat acres would not change as a result of proposed timber harvest activities. Interior habitat loss would remain at a 15 percent loss.

###### Alternative 2

Implementation of this alternative would result in the loss of approximately 1,479 acres of productive old-growth habitat. This represents approximately a 7 percent loss of the existing productive old-growth habitat in the project area (Table 3OG-5). Interior old-growth habitat acres would be reduced approximately 21 percent or 2,416 acres.

Only one area of old-growth on the entire island would go from being in the greater than 1,000 acre in size to 598 acres in size. This area of old-growth is located in the northwest portion of Suemez Island in VCU 6340. Alternative 2 is the only alternative in which this would occur.

The area along the north side of Port Refugio is low elevation, south facing habitat. Travel corridors through this area would be impacted by the harvest of proposed units in all action alternatives analyzed in the Scratchings EIS. Corridors would be maintained by beach fringe buffers and some corridors. This area also has scenic viewshed concerns and harvest prescriptions for units in the scenic viewshed would reduce impacts to corridors in the area.

Five patches greater than 1,000 acres in size and two patches greater than 10,000 acres in size would remain on Suemez Island as a result of actions proposed under this alternative.

###### Alternative 3

Implementation of this alternative would result in the harvest of approximately 955 acres of productive old-growth habitat. This represents approximately four percent of the existing productive old-



growth habitat in the project area (Table 3OG-5). Interior old-growth habitat acres would be reduced approximately 13 percent.

The area along the north side of Port Refugio is low elevation, south facing habitat. Corridors through this area would be impacted by the harvest of proposed units in all action alternatives analyzed in the Scratchings EIS. Travel corridors would be maintained by beach fringe buffers and some corridors. This area is in scenic viewshed and harvest prescriptions for units in this area would reduce impacts to the corridors in the area.

Five patches greater than 1,000 acres in size and two patches greater than 10,000 acres in size would remain on Suemez Island as a result of actions proposed under this alternative.

### **Alternative 4**

Implementation of this alternative would result in the loss of 704 acres of productive old-growth habitat. This represents approximately three percent of the existing productive old-growth habitat in the project area (Table 3OG-5). Interior old-growth habitat acres would be reduced approximately 12 percent. This alternative plans for less harvest in Dolores Watershed than in the other alternatives.

The area along the north side of Port Refugio is low elevation, south facing habitat. Travel corridors would be maintained by beach fringe buffers and corridors between units. This area has scenic viewshed concerns and harvest prescriptions for units in this area would reduce impacts to the corridors in the area. Due to the less harvest and road building in the Dolores watershed in this alternative the travel corridor concerns in that area are alleviated.

Five patches greater than 1,000 acres in size and two patches greater than 10,000 acres in size would remain on Suemez Island as a result of actions proposed under this alternative.

### **Alternative 5**

Implementation of this alternative would result in the loss of 737 acres of productive old-growth habitat. This represents approximately 3 percent of the existing productive old-growth habitat in the project area (Table 3OG-5). Interior old-growth habitat acres have been reduced by approximately ten percent to date.

The current condition has resulted from past harvest in low elevation habitat, within 1,200 feet of the road. This low elevation habitat is

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considered to be some of the most important for old-growth associated wildlife species and the biological diversity of the project area.

The area along the north side of Port Refugio is low elevation, south facing habitat. Travel corridors through this area would be impacted by the harvest of proposed units in all action alternatives analyzed in the Scratchings EIS. Corridors would be maintained by beach fringe buffers and areas of uncut trees remaining between harvest units. This area has scenic viewshed concerns and harvest prescriptions for units in this area would reduce impacts to corridors in the area.

Five patches greater than 1,000 acres in size and two patches greater than 10,000 acres in size would remain on Suemez Island as a result of actions proposed under this alternative.

#### **Overall Cumulative Effects**

The proposed harvest of 704 (Alternative 4) to 1479 (Alternative 2) acres of productive old-growth when combined with past harvest activities would result in a cumulative reduction of approximately 11 (Alternatives 3) to 14 (Alternative 2) percent of the historic productive old-growth habitat. Alternative 4 and 5 will result in a 10 percent loss (Table 3OG-5). A cumulative reduction of approximately 23 (Alternative 5) to 33 (Alternative 2) percent of the historic interior old-growth habitat acres would occur. Alternative 3 would result in a 26 percent reduction and Alternative 4 would result in a 25 percent loss. Loss or reduction of corridors between patches should not affect most mobile species to a large degree. These alternatives may affect species with limited dispersal capabilities, such as lichens, fungi, moss, plants, and small-bodied animals. Travel between these patches could be altered for these species but corridors between the two large patches would be maintained and local reductions in populations and species richness are not expected.

Actions proposed under any alternative would result in five patches greater than 1,000 acres in size and two patches greater than 10,000 acres in size remaining.

**Table 3OG-5. POG Acres and Percent Change by Alternative**

	<b>Alt. 1</b>	<b>Alt. 2</b>	<b>Alt. 3</b>	<b>Alt. 4</b>	<b>Alt. 5</b>
<b>POG 1954*</b>	22,896	22, 896	22, 896	22, 896	22, 896
<b>Past harvest</b>	1,460	1,460	1,460	1,460	1,460
<b>Other</b>	50	50	50	50	50
<b>Total POG remaining</b>	21, 386	21,386	21,386	21,386	21,386
<b>% Change from 1954</b>	-7%	-7%	-7%	-7%	-7%
<b>Proposed POG harvest</b>	0	1,479	955	704	737
<b>2007 POG remaining</b>	21,386	19,907	20,431	20,682	20,649
<b>% Change</b>	0	-7%	-4%	-3%	-3%
<b>Total POG harvest**</b>	1,510	2,989	2,465	2,214	2,247
<b>Total % change</b>	-7%	-14%	-11%	-10%	-10%

\* All POG values are in acres

\*\* Includes the 50 acres of other

Acres of POG harvest in these tables do not match acres of total harvest.

### **Cumulative Effects of Alternatives 2, 3, 4, and 5**

Alternative 2 would result in an overall loss of 14 percent of original POG, a total of 2,989 acres (Table 3OG-5) and a total loss of 33 percent of original (1954) interior habitat acres. Alternative 3 would result in an overall loss of 11 percent of original POG, a total of 2,465 acres (Table 3OG-5) and a total loss of 26 percent of original (1954) interior habitat acres. Alternative 4 would result in an overall loss of 10 percent of original POG, a total of 2,214 acres (Table 3OG-5) and a total loss of 25 percent of original (1954) interior habitat acres. Alternative 5 would result in an overall loss of 10 percent of original POG, a total of 2,247 acres (Table 3OG-5) and a total loss of 23 percent of original (1954) interior habitat acres (Table 3OG-5).



### Threatened, Endangered, and Listed Sensitive Wildlife, Fish, and Plant Species

#### Threatened and Endangered Species

This section describes the occurrences of and project effects on species that are federally listed or are proposed to be listed as threatened or endangered. This section includes equivalent information on Forest Service listed sensitive species. The Biological Assessment (BA) and Biological Evaluation (BE) prepared for the Scratching Timber Sale as required by Section 7 of the Endangered Species Act (ESA) as amended; and the Forest Service Threatened, Endangered and Sensitive Plant and Animal Species Policy (FSM 2670) serve as a basis for this section. The BA/BE is available in the planning record. Federally listed threatened and endangered species are those plant and animal species formally listed by the US Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS) under the authority of the Endangered Species Act of 1973 as amended.

No plant, land animal, fish, or bird species, listed as threatened or endangered by the USFWS, are known to occur within or near the Scratchings Project Area. The humpback whale, and the Snake River sockeye salmon may occur in the outer waters of the Alexander Archipelago and are listed as endangered by NMFS. Only the humpback whale which returns to feed in Alaska waters during the summer is known to occur in the marine waters surrounding Suemez Island. The Northern (Steller) sea lion, the Snake River spring/summer Chinook salmon, and the Snake River fall Chinook salmon are listed as threatened species by NMFS. Only the Steller sea lion is known to occur in the marine waters around Suemez Island. No effects on any federally listed threatened or endangered species populations are expected by any of the proposed activities.

#### Humpback Whale

Humpback whales are the most abundant of the eight species of endangered whales that occur in Southeast Alaska waters. Their population in the North Pacific is about 1,200, which is about eight percent of the prewhaling population. These whales are regularly sighted in the Inside Passage and coastal waters of the Southeast Alaska panhandle from Yakutat Bay south to Queen Charlotte Sound. Humpback whales feed in Southeast Alaskan panhandle waters from about May through December, although some have been seen every month of the year. Peak numbers of whales are

usually found in nearshore waters during late August and September, but substantial numbers remain until early winter. The following Forest-wide standards and guidelines have been developed for the Tongass Land Management Plan Revision FEIS (1997):

1. Provide for the protection and maintenance of whale habitats.
2. Ensure that the Forest Service permitted or approved activities are conducted in a manner consistent with the National Marine Fisheries Service regulations for approaching whales, dolphins, and porpoise. "Taking" includes harassing, pursuing, or attempting any such disturbance.

No impacts on whales from implementation of proposed activities are anticipated from the Scratchings project.

## **Steller Sea Lion**

The Steller (northern) sea lion ranges from Hokkaido, Japan, through the Kuril Islands and Okhotsk Sea; Aleutian Islands and central Bering Sea; Gulf of Alaska; Southeast Alaska; and south to central California. Sufficient information does not exist to consider animals in different geographic regions as separate populations. The centers of abundance and distribution are the Gulf of Alaska and Aleutian Islands, respectively. Important food resources include walleye pollock, salmon, eulachon, and cephalopod mollusks. Steller sea lions forage predominantly in nearshore areas and over the continental shelf.

The NMFS listed the Steller sea lion as a threatened species throughout its range in 1990 because of an abrupt population decline observed primarily in the former Soviet Union, Gulf of Alaska, and Aleutian Islands over a 31 year period. The number of sea lions observed on certain rookeries from Kenai Peninsula to Kiska Island declined by 63 percent since 1985 and by 82 percent since 1960 (Reeves et al. 1992). Significant declines have also occurred on the Kuril Islands. The cause of overall population declines has not been confirmed. However, incidental mortality of sea lions in commercial fishing gear; shooting by fishermen; and reduced prey species due to commercial fishing operations; have probably contributed significantly to declines. The National Marine Fisheries Service published a proposed rule to recognize two distinct populations of Steller sea lions in 1995. The two populations include a western population, west of 144 degrees west longitude and an eastern population, generally east of Cape

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Suckling and including Southeast Alaska. Identification of the two populations was based on genetic analysis. The proposed rule further recommended that the western population be reclassified, due to continued precipitous declines, from threatened to endangered (Federal Register 60:51968-51978).

Buffer zones restricting human activities were established around rookeries west of 150 degrees west longitude when the sea lion was given emergency listing as a threatened species in the Federal Register (April 5, 1990). This buffer zone does not include Southeast Alaska.

Southeast Alaska populations of Steller sea lions have not declined to the extent that other populations have. Harassment or displacement of sea lions from preferred habitats by human activities such as boating, recreation, aircraft, log transfer facilities, log raft towing, etc., is a concern with regard to long-term conservation of the sea lion in Southeast Alaska. Forest-wide Standards and Guidelines direct the Forest Service to prevent and/or reduce potential harassment of sea lions and other marine mammals due to activities carried out by or under the jurisdiction of the USDA Forest Service. These 1997 Tongass Land and Resource Management Plan, as amended (Forest Plan) standards and guidelines are as follows:

1. Protect Steller sea lion habitats.
2. Ensure that Forest Service permitted or approved activities are conducted in a manner consistent with the requirements, consultations, or advice received from the appropriate regulatory agencies for the Marine Mammal Protection Act, the Endangered Species Act, and National Marine Fisheries Service guidelines for approaching seals and sea lions. "Taking" of marine mammals is prohibited. "Taking" includes harassment, pursuit, or attempting any such activity.
3. Locate facilities, camps, Log Transfer Facilities, campgrounds, and other developments one-mile from known haul-outs, and, farther away, if the development is large.
4. Cooperate with State and other Federal agencies to develop sites and opportunities for the safe viewing and observation of marine mammals by the public. Maintain a public education program explaining Forest management activities related to marine mammals in cooperation with State and other Federal agencies.



The nearest known sea lion haul-out is at Cape Addington on Noyes Island. Cape Addington is approximately 25 miles to the northwest of Port Refugio. No impact on sea lions from implementation of proposed activities is anticipated by the implementation of any action alternative associated with this project.

**Table 3TE-1. Threatened, Endangered Species**

Common Name	Scientific Name	ESA Status	Summary of BA Findings
Humpback Whale	<i>Megaptera novaeangliae</i>	Endangered	No impact
Steller Sea Lion	<i>Eumetopias jubatus</i>	Threatened	No impact

## Environmental Consequences on Threatened and Endangered Species

### Direct and Indirect, and Cumulative Effects of All Alternatives

No direct, indirect or cumulative effects to the Steller sea lion or the humpback whale are anticipated as a result of any of the alternatives proposed in the Scratchings EIS.

### Listed Sensitive Species

The Regional Forester of the Forest Service has the authority to designate species as sensitive. Sensitive species are those plant and animal species for which population viability is a concern, as evidenced by significant current or predicted downward trends in population numbers or density, or significant or predicted downward trends in habitat capability that would reduce a species' existing distribution. The Forest Plan provides standards and guidelines for protection of these species. The trumpeter swan, Queen Charlotte (northern) goshawk, osprey, and Peale's peregrine falcon are sensitive species for the Tongass National Forest that may occur in the Scratchings Project Area. The Kittlitz's murrelet is also a listed species however it is not known to occur in the project area. A complete Biological Evaluation is available in the project planning record.

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**Table 3TE-2. Sensitive Species**

Common Name	Scientific Name	BE Finding
Trumpeter swan	<i>Cygnus buccinator</i>	No Impact
Queen Charlotte goshawk	<i>Accipiter gentilis laingi</i>	May Impact Individuals
Osprey	<i>Pandion haliaetus</i>	No Impact
Peale's peregrine falcon	<i>Falco peregrinus pealei</i>	No Impact
Kittlitz's Murrelet	<i>Brachyramphus brevirostris</i>	No impact

#### **Trumpeter Swans**

Each year many swans pass through southern Southeast Alaska in the spring and fall during migration to and from their breeding grounds. Swans that spend the winter in the area usually move to large lakes and estuaries once the weather turns cold. They arrive in the area in mid-October as they are migrating south. Numbers increase as migration continues. Swans typically leave for their breeding area by mid-April. Only one sighting of swans has been documented on Suemez Island (2000). This project would not impact individual swans or overall population viability.

#### **Queen Charlotte (Northern) Goshawk**

The Queen Charlotte goshawk is a medium-sized raptor associated with forests having tall, dense canopies. The Queen Charlotte goshawk is a distinct subspecies which is found only in coastal British Columbia and Southeast Alaska. Goshawks prefer old-growth habitat for nesting and roosting sites, and for the protective cover provided against some predators such as the red-tailed hawk and the bald eagle. Some goshawk pairs use the same nest site for two or more years while other pairs alternate between nests and may have up to five nest sites within a territory. Foraging goshawks typically use areas with high canopy closure, greater tree density, and more trees in larger size classes. Goshawks are very well adapted to this habitat type. Timber harvest activities can affect goshawk populations by fragmenting nesting and roosting habitat. The lack of food can become a limiting factor in areas where nesting habitat is available. Goshawks prey primarily upon other birds, such as grouse. The link between major prey species, the habitat they require, and the management of these habitats is recognized by the Forest Service as a key element for the conservation of goshawks in Southeast Alaska (Iverson et al. 1996). Goshawks were first seen and a nest discovered on Suemez Island in 1989. Goshawk field surveys were conducted for the Scratchings project in 2000 and 2001. Fifty-three of the units from the original unit pool were surveyed. Goshawk surveys were conducted in 38 (78 percent) of the proposed 49 units in the current unit pool. No goshawk

nests were found. The project area was revisited in 2003 and 2005.

There are four known goshawk nests on Suemez Island. Two nests (Nest #1 and #2) were discovered in 1989 when the timber crew was in the area laying out units for the Santa Cruz Timber Sale (Santa Cruz EA, Effected Environment, 7/1991, p. 20). Nest #1 was active in 1989 when discovered and the other, Nest #2 was determined to probably be an alternate nest site (Santa Cruz EA, Effected Environment, 7/1991, p. 20). These were the first documented nests of goshawks in Southeast Alaska (Santa Cruz EA, Effected Environment, 7/1991, p. 20). A third nest (Nest #3) was discovered in 1992 by ADF&G biologists working in the area. It was not active (Santa Cruz Timber Sale Goshawk Management Recommendations, L. Kvaalen, November 27, 1992, p. 1).

None of these three nests was recorded as active between 1989 and 1992 (Santa Cruz Timber Sale Goshawk Management Recommendations, L. Kvaalen, November 27, 1992, p. 1). Even in the years when the known nests are not active there have been documented goshawk sightings on the island (Craig Ranger District Wildlife Atlas, Suemez Island, various dates). In 1991 there are documented audio and visuals, in 1992 goshawks were seen in the nest watershed as well as other locations on Suemez Island. Goshawks were seen and heard in 1993 in the vicinity of nest #1 and nest #4. Adult goshawks were observed in the Port Refugio area often enough in 1992 for ADF&G biologist Craig Flatten to declare the nest area occupied (Santa Cruz Timber Sale Goshawk Management Recommendations, L. Kvaalen, November 27, 1992, p. 1). Nest #4 was discovered in April 1994. This nest was active in the spring of 1994 but by summer had failed (goshawk egg discovered on ground) (Craig Ranger District, Suemez Island Goshawk Data, 1994). In 1994, when nest #4 was found, there were several documented sightings of goshawks in the area. There was much activity in the area in 1996 but none of the known nest sites were active. Two birds were observed in the area in 1996 on two separate occasions and an audio was detected on a third occasion. A plucking post was discovered to the north of nest #2 in 1996. The plucking post site contained feathers, pellets and beak. Sharp-shinned hawks were observed in the area in 1997. There was no documented activity in 1998. Goshawks were again seen and heard in the area of nest #4 in 1999 but the nest was not active. Sharp-shinned hawks were seen in 1999 as well and a nest was located in the vicinity of goshawk nests #2 and #3. Sharp-shinned hawks were in the area again in 2001.

Over the years a lot of time has been spent on Suemez Island trying to locate alternate nest sites with no success. There has been



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some reported goshawk activity in the area of Scratchings unit 633-020 but no nest has been found after five visits to the area (Craig Ranger District goshawk data sheets dated August 4, 7, 9, 16 and 20, 2000). An unidentified feather (not believed to be that of a goshawk) was discovered in unit 634-046 on 7/31/01 (Goshawk Data Sheet, Scratchings Timber Sale). A goshawk feather was found in unit 637-094 on 7/30/01 (Goshawk Data Sheet, Scratchings Timber Sale). This entire area was revisited in the summer of 2002 with no evidence of goshawks found (Scratchings map, dated 8/15/2002). This unit has been dropped/deferred for the Scratchings Timber Sale. An audio was heard in the area of the units in south Santa Cruz in the summer of 2001 (26 July 2001) and a follow up visit to the area was done in the summer of 2002. No goshawks were ever seen in the area. There is a possible audio detection on August 20, 2000 near unit 635 -006 and -007. This was detection was very close to the known sharp-shinned hawk nest and it is possible that the audio was a sharp-shinned hawk.

The Forest Plan states that existing roads within a goshawk buffer may be maintained and that new road construction is permitted if no other reasonable roading alternatives outside the mapped nesting habitat exist. No continuous disturbance is permitted within the surrounding 600 feet buffer from 15 March to 15 August. These restrictions may be removed for active nests that become inactive or fail (Forest Plan, 1997, p. 4-91).

In the interagency biological preferred old growth reserve for VCU 6350 a portion of the four known goshawk nest buffers are incorporated into the OGR design.

#### **Osprey**

No known osprey nest locations exist on Suemez Island. Nest trees are usually broken-top spruce, either live or dead, and Western hemlock snags. Osprey are usually found near water since their diet consists mainly of fish. Osprey have been known to stop at some lakes on Prince of Wales Island during migration. No nests have been recorded in or near the project area. This project is not expected to affect nesting osprey because no known nest sites occur in the project area, and availability of nesting and foraging areas do not appear to be a factor limiting population growth. The standards and guidelines outlined in the Forest Plan will be followed if nests are discovered.

## **Peale's peregrine falcon**

The Peale's subspecies of the peregrine falcon nests on the outer islands west of Prince of Wales Island. The nest distribution of this subspecies is closely associated with large seabird colonies, and seabirds are believed to be the major prey of this falcon. No seabird colonies are located in or near the project area. Potential nesting cliffs exist on the extreme outer coast of Suemez Island. No activity is proposed in the area of potential nest sites for the Scratchings project. The project would not impact Peale's peregrine falcons or their habitat based on this information.

## **Kittlitz's Murrelet**

The Kittlitz's murrelet is a candidate species that has been proposed for listing under the Endangered Species Act. This small diving seabird breeds only in certain sections of coastal Alaska and to a limited extent in the Russian Far East. The largest known populations occur in Southeast and Southcoastal Alaska. LeConte Bay, east of Petersburg, is at the southern end of its range. The Kittlitz's murrelet forages almost exclusively at the face of tidewater glaciers or near the outflow of glacial streams, and nests in alpine areas in bare patches among the ice and snow. This seabird is sometimes referred to as the "glacier murrelet". No suitable Kittlitz's murrelet habitat exists in or near the project area; therefore, no effect on this species is expected as a result of this project.

## **Listed Sensitive Plant Species**

No threatened or endangered plant species exist within or near the project area. Nineteen plant species are designated as sensitive for the Alaska Region (June 2002). Nine sensitive plant species are known or suspected to occur on the Craig Ranger District (Table 3TE-3).

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**Table 3TE- 3. Known or Suspected Alaska Region Listed Sensitive Plant Species on the Craig Ranger District**

Common Name	Scientific Name	Known/Suspected	Determination
Goose-grass sedge	<i>Carex lenticularis</i> var. <i>dolia</i>	Suspected	No Impact
Davy mannagrass	<i>Glyceria leptostachya</i>	Suspected	No Impact
Wright filmy fern	<i>Hymenophyllum wrightii</i>	Suspected	May Impact Individuals
Truncate quillwort	<i>Isoetes truncata</i>	Suspected	No Impact
Calder lovage	<i>Ligusticum calderi</i>	Known	No Impact
Bog orchid	<i>Platanthera gracilis</i>	Known	No Impact
Loose-flowered bluegrass	<i>Poa laxiflora</i>	Suspected	May Impact Individuals
Unalaska mist-maid	<i>Romanzoffia unalaschcensis</i>	Suspected	No Impact
Queen Charlotte butterweed	<i>Senecio moresbiensis</i>	Known	No Impact

The only listed plant species found in the Scratchings project area is the Calder lovage. Several populations were discovered in two distinct locations on the Suemez Island along proposed road lines. Both of these planned road locations have been dropped from consideration for the Scratchings project. These roads accessed units which have been deferred for the Scratchings unit pool due to reasons such as economics, soils concerns or steep slopes.

Another six sensitive plant species are suspected to occur on the Craig Ranger District, but have not been located. Sensitive plant surveys were conducted in the Scratchings project area in 2001 and 2002. A total of 32 units were surveyed, 45 percent of the unit pool; units to survey were selected based on habitat where known or suspected plants were expected to occur. Seventeen miles of proposed road corridor were surveyed for sensitive plants.

No other Region 10 sensitive plant species were found during field surveys. Most sensitive plant species with the potential to occur in the project area would occupy habitats that most timber harvest and road construction activities would avoid. These habitats include wet, boggy,



or open meadow areas; rocky slopes or cliff areas; stream and lake margins; and shorelines. Very wet areas and cliffs were generally excluded from harvest units. Riparian management areas are prescribed along all Class I, II, and III streams and lakes. No impacts are expected for populations of any of the species although undetected individual sensitive plants could be affected. Appropriate mitigation measures would be taken if sensitive plants are found within or adjacent to areas where activities are proposed.

## **Environmental Consequences**

### **Direct and Indirect Effects**

No impacts would occur on any listed sensitive animal or bird species, other than the goshawk, as a result of the harvest of POG. Potential goshawk nesting and foraging habitat would be reduced in all action alternatives as a result of the harvest of POG. Indirect effects may include reduction of prey species habitat for goshawk as a result of old-growth habitat fragmentation. No known goshawk nest sites would be disturbed by any of the proposed activities

Two species of sensitive plants, the Wright filmy fern and the loose-flowered bluegrass, have a finding of “may adversely impact individuals but not likely to result in a loss of viability in the planning area nor result in a trend toward federal listing”. The Wright filmy fern has this determination because so little is known about its distribution and habitat. No observations of this species have been documented in the project area; however, undetected individuals may occur. No observations of loose-flowered bluegrass were documented in the project area but habitat for the species is present. This species can be easily overlooked hence the determination of “may adversely impact individuals but not likely to result in a loss of viability in the Tongass National Forest nor result in a trend toward federal listing”. The other known or suspected plant species either do not have habitat present on Suemez Island or their habitat is not likely to be impacted by the proposed activity.

### **Alternative 1**

This alternative would have the least impact on the Queen Charlotte goshawk. No additional goshawk habitat would be impacted other than by natural causes.

No impacts are anticipated to the trumpeter swan, osprey, Peale’s peregrine falcon or any sensitive plant species as a result of the No Action Alternative.

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#### **Alternative 2**

This alternative may impact Queen Charlotte goshawk as a result of harvesting potential habitat. This alternative is proposing to harvest about 1,479 acres of POG and an additional 86 acres on non-POG for a total of 1,565 harvest acres. Indirect effects may include reduction of prey species habitat for goshawk as a result of old-growth habitat fragmentation. This alternative may impact individual goshawks but is not likely to cause a trend to federal listing or loss of viability.

Two plant species, the Wright filmy fern and loose-flowered bluegrass have the determination of “may adversely impact individuals but not likely to result in a loss of viability in the Tongass National Forest nor result in a trend toward federal listing”.

No impacts are anticipated to the trumpeter swan, osprey, or Peale’s peregrine falcon as a result of this alternative.

#### **Alternative 3**

This alternative may impact Queen Charlotte goshawk as a result of harvesting potential habitat. This alternative is proposing to harvest a total of approximately 1,024 acres of which 955 acres is POG and 69 acres of non-POG. Indirect effects may include reduction of prey species habitat for goshawk as a result of old-growth habitat fragmentation. This alternative may impact individual goshawks but is not likely to cause a trend to federal listing or loss of viability.

Two plant species, the Wright filmy fern and loose-flowered bluegrass have the determination of “may adversely impact individuals but not likely to result in a loss of viability in the Tongass National Forest nor result in a trend toward federal listing”.

No impacts are anticipated to the trumpeter swan, osprey, or Peale’s peregrine falcon as a result of this alternative.

#### **Alternative 4**

This alternative may impact Queen Charlotte goshawk as a result of harvesting potential habitat. Alternative 4 would have the least impact to the Queen Charlotte goshawk of the proposed action alternatives. This alternative is proposing to harvest about 704 acres of POG and an additional 56 acres of non-POG. The total proposed harvest acres would be approximately 760 acres. Indirect effects may include reduction of prey species habitat for goshawk as a result of old-growth habitat fragmentation. This alternative may impact individuals but is not likely to cause a trend to federal listing or loss of viability.

Two plant species, the Wright filmy fern and loose-flowered bluegrass

have the determination of “may adversely impact individuals but not likely to result in a loss of viability in the Tongass National Forest nor result in a trend toward federal listing”.

No impacts are anticipated to the trumpeter swan, osprey, or Peale’s peregrine falcon as a result of this alternative.

## Alternative 5

This alternative may impact Queen Charlotte goshawk as a result of harvesting potential habitat. This alternative is proposing to harvest about 737 acres of POG and an additional 47 acres of non-POG for a total of approximately 784 acres of harvest. Indirect effects may include reduction of prey species habitat for goshawk as a result of old-growth habitat fragmentation. This alternative may impact individuals but is not likely to cause a trend to federal listing or loss of viability.

Two plant species, the Wright filmy fern and loose-flowered bluegrass have the determination of “may adversely impact individuals but not likely to result in a loss of viability in the Tongass National Forest nor result in a trend toward federal listing”.

No impacts are anticipated to the trumpeter swan, osprey, or Peale’s peregrine falcon as a result of this alternative.

**Table 3TE-4. Proposed POG Harvest by Alternative**

<b>Proposed harvest acres</b>	<b>Alt. 1</b>	<b>Alt. 2</b>	<b>Alt. 3</b>	<b>Alt. 4</b>	<b>Alt. 5</b>
<b>POG</b>	0	1,479	955	704	737
<b>Non-POG</b>	0	86	69	56	47
<b>Total</b>	0	1,565	1,024	760	784

A total of 1,460 acres of past harvest has occurred on Suemez Island.

## Cumulative Effects to Sensitive Species

### Alternative 1

No impacts are anticipated to the trumpeter swan, osprey, Peale’s peregrine falcon, goshawk or any sensitive plant species as a result of this alternative.

### Alternatives 2, 3, 4, and 5

Because no direct or indirect effects are anticipated to the trumpeter swan, osprey, Peale’s peregrine falcon, or any sensitive plant species,



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no cumulative effects are anticipated to these species. Individual goshawks may be impacted as a result of this sale but it is not likely to tend the species toward listing as threatened or endangered; reasonably foreseeable activities listed in Table 3-1 of this chapter (road storage, free use permits and access travel management) are not anticipated to have additional impacts on goshawk in the project area.

## **Timber and Vegetation**

The natural vegetation of the Scratchings project area is a mosaic of coniferous forest intermixed with alpine, muskeg, riparian, and shrubland plant communities. Hemlock and Sitka spruce forests occur on well-drained sites in this area. Mixed conifer forest types occupy areas with restricted drainage. Open shrubby bogs and fens occur on the wettest sites. Transition zones exist between well-drained western hemlock/Sitka spruce sites and restricted drainage mixed conifer sites. These zones are commonly occupied with a mix of western hemlock, western redcedar, and Alaska yellow-cedar. Ancient volcanic activity, glaciation, and exposure to storm winds all affect the current forest structure and developmental patterns in the area.

### **Forest Land Classification**

National Forest System (NFS) lands are defined by vegetative cover, soil type, and administratively designated land use. This classification scheme is intended to show the amount of land that is covered by forest vegetation, with further divisions to show the amount of land that is capable of commercial timber production. Chart 3T-1 shows the NFS land classifications in the Scratchings project area.

#### **Non-forest Land**

About 3 percent of the NFS land in the Scratchings project area is classified as non-forest. Non-forest land is land that is biologically unable to support at least a ten percent tree cover. This land classification includes muskegs, rock outcrops, talus slopes, alpine vegetation, and river systems, among others.

#### **Forest Land**

About 97 percent of the NFS land in the Scratchings Timber Sale project area is classified as forest land. Forest land has at least 10 percent tree cover of any size, or formerly had such tree cover and is not currently developed for non-forest use (36 CFR 219.3).

#### **Productive Forest Land**

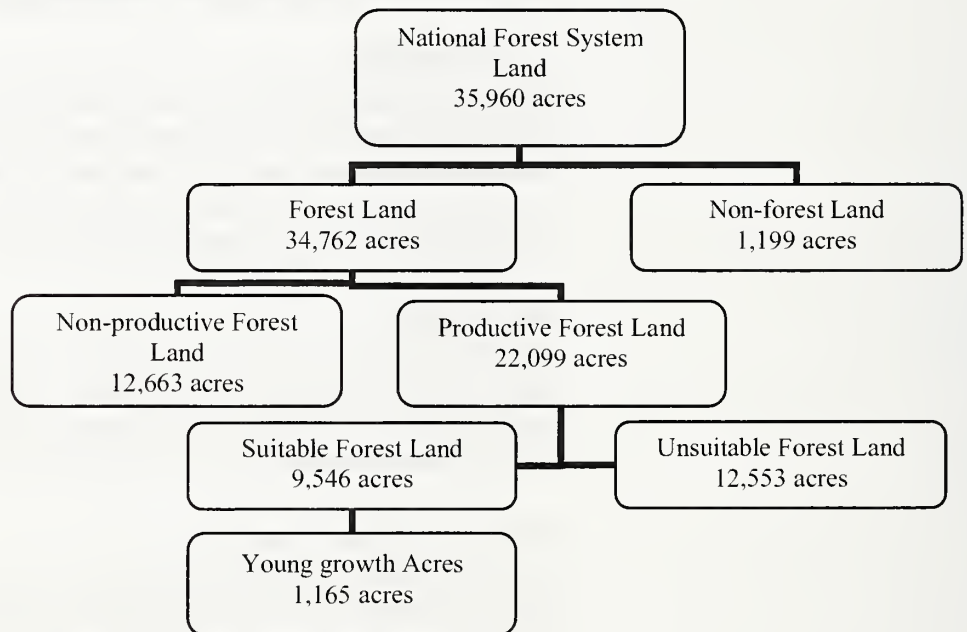
About 62 percent of the NFS land in the Scratchings Timber Sale project area (64 percent of forest land) is classified as Productive Forest. Productive forest lands are National Forest System lands that have timber volumes of at least 8,000 board feet per acre or have the potential to achieve this volume and are capable of maintaining that volume. This land is capable of producing 20 cubic-feet per acre, per year of tree growth. Productive forest land includes young-growth stands that have regenerated with conifer species after natural or human disturbance. Productive forest lands are further classified as either suitable or unsuitable for timber production.

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**Suitable and Available Forest Land** – The Forest Plan assigned Land Use Designations (LUDs) that allow timber harvest to those areas that were determined to be suitable for timber production. Some land was removed from the suitable timber base due to Forest Plan standards and guidelines within those areas. Appendix A of the Forest Plan describes the process that was used to identify suitable forest land. About 43 percent of the productive forest land in the Scratchings project area is classified as Suitable for Timber Production.

**Unsuitable Forest Land** – Unsuitable forest lands are those lands that have resource concerns that preclude timber harvest. Areas with slopes greater than 72 percent that have unstable soils and areas within riparian, beach and estuary buffers are examples of forest land classified as unsuitable for timber production. About 57 percent of the productive forest land in the Scratchings project area is classified as unsuitable for timber production.

**Chart 3T-1. Current National Forest System Land Classifications in the Scratchings Timber Sale Project Area**



#### Timber Volume Classification

Historically, forested lands in the Tongass National Forest were estimated using volume class, which is based on interpretation of aerial photos. The Forest Plan replaced volume class with volume strata for the classification of forest land. Timber volume estimates for



this project are based on stand exams and are classified by volume strata. Information on acres planned for harvest under each alternative by volume class is available in the Silviculture resource report. This report is available in the project record.

## Volume Strata

The volume strata classification system adopted by the Forest Plan incorporates volume class, soils and slope information. The volume strata classification of Productive Forest Land in the Scratchings project area is described below.

**High volume strata** – Areas within timber inventory volume classes 5, 6, and 7 on non-hydric soils, and on hydric soils with slopes greater than 55 percent. Hydric soils become waterlogged or saturated with water long enough during the growing season to affect the growth rate of trees.

**Medium volume strata** – Areas within timber inventory volume classes 5, 6, and 7 on hydric soils with slopes less than or equal to 55 percent, and areas within timber inventory volume Class 4 that are either on non-hydric soils or are on hydric soils with slopes greater than 55 percent.

**Low Volume Strata** – Areas within timber inventory volume Class 4 that are on hydric soils with slopes less than or equal to 55 percent.

**Other Volume Strata** – Due to mapping errors, minor amounts of productive forestlands that are within proposed units are coded as no volume strata within Geographic Information System data. These areas generally have the characteristics of low volume strata when investigated on the ground. Table 3T-1 displays the acres of each volume strata in the project area and in proposed harvest units by alternative.

**Table 3T-1. Scratchings Project Area Volume Strata Distribution by Alternative**

Volume Strata	Acres in Project Area	Acres in Proposed Harvest Units				
		Alt.1	Alt.2	Alt.3	Alt.4	Alt.5
<b>Low</b>	4,295	0	361	328	306	244
<b>Medium</b>	7,601	0	588	369	329	244
<b>High</b>	9,484	0	873	600	358	493
<b>Other<sup>1</sup></b>	15,747	0	98	80	67	50

<sup>1</sup> Other refers to inclusions of areas mapped as unproductive forest or non-forest within units.

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#### Forest Health and Natural Disturbance

##### Wind Disturbance

The loss of trees, singly or in groups, to the effects of wind is the number one factor affecting stand structure and development in Southeast Alaska. High-wind events occur in Southeast Alaska each year, causing considerable damage and loss. Wind disturbance creates some beneficial effects. Mixing of soil associated with uprooted trees is thought to contribute to the prevention of impermeable soil layers. Site productivity may be enhanced through soil mixing, thus promoting nutrient cycling. Other beneficial effects include the exposure of mineral soil, which favors the regeneration of Sitka spruce and cedar and the creation of large woody material for wildlife use.

Wind damage results in uprooted trees “windthrow or blowdown” and breakage, or “stem snap.” Windthrow plays an important role in stand development. Wind disturbance occurs over time and is dependent on topographic features (Nowacki and Kramer 1998). Stand structure can give clues to prevailing wind disturbance patterns. Stands develop old-growth characteristics through a process called gap replacement. Small openings in the forest canopy are created from wind damage and are colonized by brush and eventually conifer species in wind-sheltered areas.

Stem snap from wind disturbances often occurs in conjunction with stem rots, which can create weak points in the trunks of trees. The trunks of trees are also known as boles. Falling trees may wound nearby trees, predisposing them to fungal infections. A two-layered stand, and eventually a multilayered stand, develops over time. Small openings are continually created and colonized. Unharvested stands in areas where wind disturbance promotes gap replacement may reach a certain degree of stability with respect to wind.

Traditionally, forest managers have applied large-scale clearcuts in an attempt to minimize losses to timber production due to windthrow. Current Forest Service direction calls for the use of alternatives to clearcutting unless clearcutting has been determined to be the optimum method of regeneration required to meet Forest Plan objectives. Openings should take advantage of naturally occurring windfirm edges including muskegs and low-volume stands as well as topographic features that deflect the effects of wind if the clearcut regeneration method is prescribed, especially in wind-prone areas.

Existing blowdown within a stand is the most important indicator of windthrow hazard. Certain conditions are indicators of windthrow hazard for individual trees as well as stands.

These factors affecting windthrow were considered when determining windthrow risk within the project area:

- Meteorological Conditions (predominant wind direction, characteristics of storms, wind speeds in terms of gale, storm and hurricane force)
- Individual Tree Characteristics
- Stand Level Characteristics
- Soil Characteristics (rooting)
- Topographic Characteristics (exposure to gale force or stronger winds)

Conditions that predispose individual trees to wind damage include the following:

- **Height/diameter ratio** - A height/diameter ratio greater than 100 is very unstable for most species.
- **Size of crown** - A large crown relative to a tree's rooting structure may predispose that tree to windthrow. This is especially true when a stand is opened up because of logging or natural occurrence.
- **Rooting depth** - Shallow soils inhibiting root penetration decrease a tree's ability to withstand the force of high winds.
- **Degree of exposure** - Trees tightly grown in a dense stand are generally more susceptible to wind damage than open grown trees when exposed to wind by partial harvest or natural events.
- **Root and stem decay** - Root decay weakens a tree's support structure, whereas stem decay may cause a tree to break.
- **Lean** - Leaning trees have a greater disposition to windthrow due to increased gravitational stresses.
- **Seedbed** - Trees established on old logs or the upturned roots of old windfalls develop exposed roots as the rooting structure decays. These roots are known as stilt roots. Trees with stilted roots tend to be less windfirm.
- **Species** - Generally, western hemlock, mountain hemlock, and Sitka spruce are less windfirm than western redcedar and Alaska yellow-cedar.

Characteristics that predispose stands to wind damage include the following:

- **Stand age** - Old-growth stands (at or near successional climax) are less windfirm than young-growth or second-growth stands.
- **Stand height** - Tall stands are more susceptible to wind damage.



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- **Stand density** - Dense stands on productive sites are more susceptible to wind damage when opened through harvesting or natural occurrence. Open-grown stands have developed individual tree characteristics that tend to reduce windthrow potential.
- **Species composition** - Hemlock and spruce stands are more susceptible than stands dominated by cedar species.
- **Topography and aspect** - Areas exposed to southerly storm winds are generally more susceptible. Topography and aspect sometimes combine to accelerate winds, thereby leaving stands more susceptible to wind damage.

Moderate to high windthrow hazard generally occurred in areas with exposure due to topography, vortex winds or adjacent past harvest areas in the Scratchings project area.

Comments were received on the Scratchings Draft EIS that led to additional evaluation of windthrow risk in the project area. To address this, two analyses were undertaken:

- The first analysis was the development of a windthrow risk map that spatially shows where existing pre-harvest windthrow risk was found to be high, moderate and low. To compliment this assessment, a map was developed that depicts where the boundaries of harvests proposed under each alternative might be at risk for wind damage after harvest. If a harvest alternative is selected, the unit edges at risk of windthrow will be further reviewed by a silviculturist during unit layout to determine if modifications to the unit are necessary to assure windfirmness.
- The second analysis was to develop an assessment of the historic windthrow patterns in the project area. This assessment is available in the project record.

The documentation of how these analyses were conducted is available in the Scratchings project record along with the maps and GIS coverages.

#### **Windthrow Risk Results:**

The following table shows acres of proposed harvest by existing condition wind risk for each alternative.

**Table 3T-2. Acres of Proposed Harvest by Existing Condition  
Wind Risk by Alternative**

Alternative	Alt. 2	Alt. 3	Alt. 4	Alt. 5
High Risk	819	629	489	571
Moderate Risk	470	252	192	159
Low Risk	630	495	379	300
Total	1,919	1,376	1,060	1,030

**Table 3T-3. Acres adjacent to harvest boundaries identified as  
high wind risk**

Alternative	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Acres of high wind risk boundaries	136	67	51	55

### **Yellow-cedar Decline**

Within the Scratchings project area, Alaska yellow-cedar is experiencing mortality referred to as cedar decline. Cedar decline is characterized by extensive tree deaths occurring on poorly drained soils. Researchers currently believe this mortality is the result of a combination of factors centered around freezing injury to roots resulting from low snow pack and poor soil drainage (Hennon 2006).

Recent studies in Southeast Alaska have shown that reduced snow pack at lower elevations allows solar-radiation to penetrate and warm soils in open-canopy forests where we see cedars dying. This warming triggers growth of yellow-cedar in spring, which is the time of year when yellow-cedar trees are most susceptible to freezing. Snow pack during March and April when freezing injury is likely to occur slows the growth process and also provide insulating protection to shallow fine roots. Yellow-cedar appears healthy on many productive sites with better drainage where roots can grow deeper and where closed-canopy forests provide shade to slow the start of growth in spring (Hennon 2006).

### **Dwarf Mistletoe**

The occurrence of dwarf mistletoe in late successional western hemlock stands is widespread throughout Southeast Alaska including the Scratchings project area. The small-scale (canopy gap) disturbance pattern in the old forests of coastal Southeast Alaska favors the short-range dispersal mechanism of hemlock dwarf mistletoe and may explain the common occurrence of the disease in this area (USDA R10-TP-87, 2001, p.142). Dwarf mistletoe presence was recorded in nearly every proposed harvest unit in the Scratchings project area.

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#### **Decay Fungi**

Decay caused by heart-rotting and root-rotting fungi is probably the greatest single cause of disease-related timber volume loss in Alaska (Laurent 1974). Such damage is present within the Scratchings project area. Approximately one-third of the old-growth timber volume in Southeast Alaska is defective largely due to heart-rotting fungi. Heart rot causes considerable damage in all conifer species in Southeast Alaska but is more common in western hemlock, mountain hemlock, and Sitka spruce. Decay centered in the boles of trees can weaken the support structures, thereby leading to breakage. The broken portion of the tree may wound adjacent trees as it falls to the forest floor. Wounds to adjacent trees may lead to eventual infection of these trees. This is a continual process in old-growth forests in Southeast Alaska and contributes to the diversity of the stand structure. Decay-causing fungi are present in all stands within the analysis area.

#### **Canker (Hemlock and Spruce)**

Hemlock canker was found affecting understory trees and in some cases overstory trees within a number of proposed harvest units in the project area. This disease is typically minor in Southeast Alaska and does not normally need control. Cankers are caused by fungi and can occur on both western hemlock and Sitka spruce. Most cankers on larger trees eventually heal and are not very damaging unless many occur on the same tree or are located on the main stem. Canker affecting small seedlings or saplings typically kill the tree. (USDA R10-TP-87, 2001, pp. 150-151). Canker damage in the project area is extensive and has resulted in heavy understory tree loss in some areas. This extent of damage is not typical in Southeast Alaska except along roads where road dust is believed to aggravate the problem.

#### **Hemlock Fluting**

Fluting is a non-infectious disorder common in western hemlock growing in exposed areas along beaches or in second-growth stands. The disorder is characterized by deeply incised vertical ridges and grooves along the main stem of the tree. The tree is not injured by the disorder and may actually benefit from it by being more windfirm as a result. Fluting does however reduce the trees economic value for lumber because of bark inclusions, voids and irregular grain (USDA R10-TP-87, 2001, pp.196-197).

#### **Spruce Aphid**

Spruce aphid defoliation has occurred in Sitka spruce trees along the outer coastline of the project area. Between 2001 and 2005, aphid population appeared to build up and repeated defoliations caused noticeable mortality. Infestations occur when populations build up during repeated years with mild winter and spring temperatures. Tree



mortality tends to occur only after numerous years of high aphid populations (Insects and Diseases of Alaska Forests R10-TP-87 p.55-56). The full extent of spruce mortality, as a result of aphid activity, is not known but from observation does not appear to be, nor is it expected to be of major significance. Cool temperatures during the spring of 2006 appeared to have reduced aphid numbers to a point that noticeable defoliation is no longer occurring. No spruce aphid activity was noted in any of the proposed harvest units.

### **Silvicultural Systems**

Silvicultural systems refer to a complete set of treatments used to manage forest stands and forest landscapes over long periods of time. This process includes the initial harvest; regeneration of the stand; intermediate cuttings; and other treatments necessary for the development and replacement of the forest stand.

All silvicultural systems are adaptations of natural occurrences. Nature makes “regeneration cuts” by means of fire, insects, disease, wind, and other phenomena to remove single trees; small groups of trees; a stand; or sometimes a whole forest. Since many organisms and processes are adapted to disturbance, land managers can achieve many ecosystem objectives through the imitation of natural disturbance regimes. Silvicultural systems are applied through the written records of the examination; prescriptions; diagnosis; and treatment regimes prescribed for the stand.

The Forest Plan (Appendix G) and USDA Forest Service Manual 2400 (Timber Management) provide detailed information about the silvicultural systems recommended for the Tongass National Forest. The three systems recommended are: (1) even-aged, (2) two-aged, and (3) uneven-aged. Two of these systems (even-aged and two-aged) are proposed for the Scratchings project area. The post-harvest condition of the forest stand for all systems would be dependent upon the existing species composition, the retained canopy structure, and advanced regeneration. Species composition of the regenerated stand would be monitored to ensure that the mix of species is roughly the same as the composition on the existing site.

### **Even-aged Silvicultural System**

An even-aged system produces stands that consist of trees of the same or nearly the same age. A stand is even-aged if the range in tree ages normally does not exceed 20 percent of the rotation age (the age at which the stand is harvested). Some supportive reasons for the use of even-aged systems are: (1) compatibility with the use of standard logging systems, (2) favorable harvest economics, (3) the control of disease such as hemlock dwarf mistletoe, (4) minimize the effects of

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windthrow and (5) the creation of conditions favorable for regeneration of Sitka spruce, Alaska yellow-cedar and western redcedar. (Forest Plan, pg 4-96 – 4-97).

Stands regenerated by even-aged systems develop through distinct stages. Even-aged stands of various ages and sizes are distributed throughout the managed forest as well as the natural forest in the project area. The system produces a stand-developmental sequence much like that which follows stand replacement events such as catastrophic windthrow, landslides, or avalanches. The sequence may include dense seedlings and saplings, thinned saplings, poles, small diameter trees, medium diameter trees, and large diameter trees. Consequently, even-aged forests have relatively low diversity within a site, but they have a high degree of diversity across the landscape. Even-aged systems may require some modification to provide for other resource considerations and needs, such as reserve trees for wildlife or visuals. These reserve trees may be carried to the end of the stand rotation or removed when no longer needed to meet objectives.

#### **Size of Even-aged Openings**

National Forest Management Act (NFMA) regulations provide that 100 acres is the maximum size opening allowed for the western hemlock/Sitka spruce forest type of coastal Alaska. No exceptions to this size restriction are proposed for new harvests in the Scratchings project area. Where proposed new openings are adjacent to past harvest areas, even-aged stands larger than 100 acres would be created. NFMA regulations state that created openings considered adequately stocked with desirable tree species which are approximately five-feet tall are not to be considered when determining limitations on the scheduling, locating, and calculation of the potential size of new openings (Forest Plan, page 4-97). All previously harvested stands in the Scratchings project area are adequately stocked with desirable regeneration that is five-feet tall or taller.

#### **Two-aged Silvicultural System**

The two-aged system produces stands that contain two age classes for most of the rotation. The resulting stand may be two-aged or tend towards an uneven-aged condition as a consequence of both an extended period of regeneration and the retention of reserve trees that may represent one or more age classes. The reserve trees provide structural diversity and a biological legacy. Two-aged management regimes can produce stands of greater structural diversity than even-aged management. This method may be used where windthrow or disease are not major threats or can be tolerated (Forest Plan, p. 4-98). Two criteria must be met for a stand to be considered two-aged (Region 10 Supplement 2400-2005-1 to USDA Forest Service Manual

2400, Timber Management). These criteria are based upon: (1) the density (basal area) of residual trees, and (2) the distribution of the residual (remaining) trees.

The remaining stand must have at least an average of 15 percent of the pre-treatment basal area standing after harvest. These trees must be older than the remaining trees by 20 percent of the planned rotation age. For example, 15 percent of the stand must be 20 years older than the other trees in the stand if a rotation is 100 years. Retention may be in clumps or as individual trees. Reserves or clumps should be distributed somewhat evenly across the harvest unit or stand.

Leaving 15 percent of the green basal area in groups of old-growth trees that may actually represent multiple age classes is considered two-aged management. Clumping all or the majority of the reserve trees along the unit boundary does not qualify for two-aged management.

### **Uneven-aged Silvicultural System**

The Uneven-aged Silvicultural System regenerates and maintains a multi-aged structure by removing some trees in all size classes either singly, in small groups, or in strips. The uneven-aged system is synonymous with all-aged methods. Uneven-aged management maintains or creates a stand with trees of three or more distinct age (size) classes, either mixed or in small groups. Uneven-aged management regimes produce stands of high structural diversity. Harvest can occur under either single tree selection or group selection techniques. Single tree selection mimics the natural death of a few scattered trees across a large area. Group and strip selection typically simulates small natural disturbances where one to two acres of trees have blown down (Forest Plan, pp. G-13 – G-16).

Uneven-aged management is a favorable technique to use where aesthetic concerns override other objectives. The system is expensive and complex to implement and generally favors shade tolerant species.

### **Thinning**

Second growth stands in the Scratchings project area have been periodically surveyed to determine their needs for thinning. Stands harvested during the mid-1980s are currently suitable for pre-commercial thinning. To date, approximately 100 acres of a potential 342 acres, harvested in 1985 to 1986, have been pre-commercially thinned. Stands harvested during the mid-1990s entry are expected to be ready for pre-commercial thinning in year 2015.



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#### **Silvicultural Prescriptions - Scratchings Project Area**

Silvicultural prescriptions for the Scratchings project area were developed by a certified silviculturist to meet the objectives identified by the interdisciplinary planning team. The criteria used to select the appropriate silvicultural system for each unit includes the following:

- Scenery requirements
- Operational feasibility (possible logging systems)
- Timber Economics
- Windthrow hazard (the presence of tree and stand attributes determining windthrow potential)
- Stand conditions (diseases and decay fungi)
- Regeneration potential
- Slope stability and retaining live root mass

Silvicultural prescriptions include the entire rotation to provide guidance for treatments that may follow the harvests, including natural regeneration certification, and thinning.

Risks of windthrow have been evaluated for the project area. Stand edges created by timber harvest have been evaluated for risk of windthrow; protection measures have been incorporated into the silvicultural prescriptions. The unit edges at risk for windthrow will be further reviewed during layout.

Riparian Management Areas (RMAs) with concerns for watershed stream channel stability and windthrow potential have been identified and will have trees retained in Reasonable Assurance of Windfirmness (RAW) buffers. The size and configuration of the RAW buffer will be determined during unit layout by an interdisciplinary team as identified in the unit cards. In some cases RAW has been accomplished through unit design or silvicultural prescription

Uneven-aged management was not selected for use in any of the proposed harvest units, under any of the alternatives, because management objectives could be met using regeneration methods under other silvicultural systems. Both even-aged and two-aged management were determined to be more effective in terms of operational feasibility (possible logging systems), economics, windthrow hazard after harvest, disease control and overall regeneration potential.

#### **Clearcut– Cable, Shovel & Helicopter Yarding (Even-aged Management)**

Objectives of this prescription are to improve timber harvest economics and operational feasibility, meet Forest Plan requirements for scenery, optimize regeneration potential, and minimize windthrow

in residual and adjacent stands.

This harvest activity would result in an even-aged stand by clearcut harvest of specifically described cable, shovel and or helicopter portions of the planned alternative unit area. Areas of tree retention are generally external to final cutting unit boundaries or are along stream zones that protrude into the cutting unit. These retention areas do not meet distribution requirements for two-aged management.

Areas were deferred within the unit boundaries to meet other resource concerns. Deferrals were used to address scenery considerations, to reduce windthrow potential post harvest, to avoid harvest on areas with questionable soil stability, to avoid wetlands, and to exclude uneconomical timber. These deferred areas are shown on the unit card maps. Dispersed reserve trees will only be retained inside even-aged management harvest units where windfirm buffers need to be attained. These areas will be designated during unit layout.

Deferred areas could be harvested within the planned rotation of the harvest unit. Areas within the alternative planned unit boundary suitable for harvest, but not selected to be harvested at this time due to requirements for scenery concerns or other resource needs, may be scheduled for future harvest as soon as the goals for the retention area have been met. For example, a portion of the alternative planned unit boundary not currently scheduled for harvest due to requirements for scenery may be harvested as soon as regeneration of adjacent harvest areas has advanced to a point that the visual quality objective (VQO) for the area would not be exceeded by recent timber harvest.

Windfirm buffers would typically be applied to unit edges or stream buffers that are determined to be at the highest risk for wind damage after harvest. These would tend to be the edges of harvest units or stream buffers that have high exposure to southeast storm winds but may vary depending on the topography and location of the unit.

The desired condition for areas prescribed for even-aged clearcutting is an even-aged stand of the same species composition as the original stand that mimics the results of a large naturally occurring wind event.

Helicopter yarding areas may leave all sub-merchantable size class trees standing within the unit.

Natural regeneration is expected to be abundant.

The rotation age at which timber stands would be available for harvest again would be approximately 110 years in the high volume strata

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areas; 120 years in the medium strata areas; and 150 years in the low volume strata areas. Additional silvicultural treatments that follow the harvests may include tree planting to influence species composition, thinning, and pruning.

#### **Clearcut with Reserves – Cable, Shovel & Helicopter Yarding (Two-aged Management)**

Objectives of this prescription are: to improve timber harvest economics and operational feasibility; to retain trees to meet Forest Plan requirements for scenery; to optimize regeneration potential and; to minimize windthrow in the residual and adjacent stands.

This harvest activity would regenerate a two-aged stand by clearcut harvest of the majority of the suitable setting area. The second age class would be achieved by leaving a minimum of 15 percent of the setting pretreatment basal area, based on standing live trees, which constitute at least one age class that is separate in age from the remaining portion of the stand by at least 20 percent of the rotation.

In cable yarding areas, retention would be in groups of trees that are at least one-half acre in size located inside the harvest unit. Reserve groups must be somewhat evenly distributed across the setting and will be first located where needed to meet scenery requirements. Deferrals will also be located where additional soil protection would be beneficial, to avoid harvest on wetlands and to promote windfirmness in the stand post harvest.

In helicopter yarding areas where windthrow risk has been determined to be low or otherwise acceptable, trees retained to meet two-aged requirements will be dispersed across the harvest unit rather than grouped. The residual basal area to be retained will generally be approximately 40 to 60 percent of the standing green tree basal area. This retention level will be obtained in most cases by leaving trees standing that are less than 24 inches in diameter.

There are minor areas within each alternative that are high to moderate wind risk that are planned for two-aged management with dispersed residual trees. Where needed to offset the wind risk in these areas, the residual basal area target will be increased.

The desired condition is a two-aged stand of the same species composition as the original stand. Deferred areas would not be harvested within the planned rotation of the regenerated stand to retain the second age class. This stand should mimic the results of large to moderate scale, naturally-occurring wind event. Natural regeneration is expected to be abundant within the harvested areas.



The rotation age at which timber stands would be available for harvest again would be approximately 110 years in the high volume strata areas; 120 years in the medium strata areas; and 150 years in the low volume strata areas. Additional silvicultural treatments that follow the harvests may include tree planting to influence species composition, thinning, and pruning.

## Justification for Even-aged Clearcutting

Even-aged clearcutting is being prescribed in the Scratching project area to preclude or minimize the occurrence of potentially adverse impacts from insect or disease infestations, logging damage and windthrow.

This project implements even-aged and two-aged clearcutting in order to minimize the potential for windthrow in the residual stand while maximizing the use of cable and shovel yarding systems needed for maintaining the potential for an economic timber sale offering.

**Table 3T- 4. Silvicultural Prescriptions by Alternative**

	Alternatives				
	1	2	3	4	5
<b>Even-aged management – clearcut</b>					
<b>Harvest Acres</b>	0	1,216	790	522	651
<b>Deferred acres within Units</b>	0	277	311	258	206
<b>Total Unit Acres</b>	0	1,493	1,101	781	857
<b>Two-aged management – clearcutting with reserves</b>					
<b>Harvest Acres</b>	0	349	234	238	132
<b>Deferred acres within Units</b>	0	77	41	41	41
<b>Total Unit Acres</b>	0	426	275	279	173

## Effects of the Alternatives

The effects of timber harvest on forest structure vary by silvicultural prescription and the number of acres harvested. Clearcut and clearcut with reserves harvest treatments would result in the creation of primarily second-growth stands with or without older residual trees. Forest health concerns, including the removal of diseased trees or trees

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that face imminent mortality, can be used as factors in determining which trees to harvest.

#### **Direct and Indirect Effects**

The effects analysis area used is the Scratchings Project Area.

#### **Alternative 1**

No harvest activity would occur under Alternative 1. Tree stands would remain in a predominantly old-growth condition. Small-scale, frequent disturbance events would continue in the stand until a large-scale event occurs. Any timber volume currently being grown in the stand would likely be offset by decay. Insect and disease processes at work in the stand would persist at approximately current levels.

Hemlock regeneration would have a competitive advantage over other species when openings in the canopy do occur. Hemlock dwarf mistletoe, where present, remains in the stand and infects hemlock stems that regenerate in gaps adjacent to infected overstory trees. At some point in the future it is expected that some stands in the project area would suffer large-scale damage from a severe storm event, leading to the regeneration of the stand in what would likely be a two-aged or possibly an even-aged condition.

#### **Alternative 2**

About 1,216 acres would be managed as even-aged stands with 277 acres of areas of reserve trees retained to meet multiple objectives. Approximately 426 acres would be managed as two-aged management with 15 percent or more of the original stand basal area retained in groups of trees or trees dispersed across the unit to meet multiple objectives. Approximately 349 acres would have harvest and 77 acres would be retained as groups of trees contributing to two-aged management objectives within or adjacent to the harvested acreage.

**Table 3T-5. Proposed Harvest by Prescription and Existing Condition Wind Risk: Alternative 2**

<b>Prescription (does not include deferral acres)</b>	<b>High Risk</b>	<b>Moderate Risk</b>	<b>Low Risk</b>
<b>Even-aged Clearcut</b>	537	384	296
<b>Two-aged Clearcut with Reserves</b>	74	48	226

Young growth stands are typically more windfirm than the old growth stands they replaced. The regenerated even-aged management stands in high to moderate wind risk areas are expected to be low risk during most of the next rotation. In two-aged stands trees from the former old growth stand will remain either dispersed across the stand or in groups.

As a result, it is expected that wind risk will remain approximately the same as in the former stand.

Forest health and productivity would be improved by the removal of diseased trees and through the creation of young fast growing forests.

## Alternative 3

About 790 acres would be managed as even-aged management with About 311 acres of areas of reserve trees retained to meet multiple objectives. Approximately 275 acres would be managed as two-aged management with 15 percent or more of the original stand basal area retained in groups of trees or trees dispersed across the unit to meet multiple objectives. Approximately 234 acres would have harvest and 41 acres would be retained as groups of trees contributing to two-aged management objectives within or adjacent to the harvested acreage.

**Table 3T-6. Proposed Harvest by Prescription and Existing Condition Wind Risk: Alternative 3**

<b>Prescription (does not include deferral acres)</b>	<b>High Risk</b>	<b>Moderate Risk</b>	<b>Low Risk</b>
<b>Even-aged Clearcut</b>	400	190	200
<b>Two-aged Clearcut with Reserves</b>	21	25	188

Young growth stands are typically more windfirm than the old growth stands they replaced. The regenerated even-aged management stands in high to moderate wind risk areas are expected to be low risk during most of the next rotation. In two-aged stands trees from the former old growth stand will remain either dispersed across the stand or in groups. As a result, it is expected that wind risk will remain approximately the same as in the former stand.

Forest health and productivity would be improved by the removal of diseased trees and through the creation of young fast growing forests.

## Alternative 4

Alternative 4 was modified in response to comments received on the Draft EIS by excluding units 634-044, 634-045, 634-046, 634-047 and the helicopter yarding portions of 634-005.

This modification to Alternative 4 reduced helicopter even-aged harvest by 106 acres and helicopter two-aged harvest by 43 acres.

About 522 acres would be managed as even-aged management overall with 259 acres of areas of reserve trees retained to meet multiple



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objectives. Approximately 279 acres would be managed as two-aged management with 15 percent or more of the original stand basal area retained in groups of trees or trees dispersed across the unit to meet multiple objectives. Approximately 238 acres would have harvest and 41 acres would be retained as groups of trees contributing to two-aged management objectives within or adjacent to the harvested acreage.

**Table 3T-7. Proposed Harvest by Prescription and Existing Condition Wind Risk: Alternative 4**

<b>Prescription (does not include deferral acres)</b>	<b>High Risk</b>	<b>Moderate Risk</b>	<b>Low Risk</b>
<b>Even-aged Clearcut</b>	283	129	110
<b>Two-aged Clearcut with Reserves</b>	39	29	170

Young growth stands are typically more windfirm than the old growth stands they replaced. The regenerated even-aged management stands in high to moderate wind risk areas are expected to be low risk during most of the next rotation. In two-aged stands trees from the former old growth stand will remain either dispersed across the stand or in groups. As a result, it is expected that wind risk will remain approximately the same as in the former stand.

Forest health and productivity would be improved by the removal of diseased trees and through the creation of young fast growing forests.

#### **Alternative 5**

About 651 acres would be managed as even-aged management with about 206 acres of areas of reserve trees retained to meet multiple objectives. Approximately 173 acres would be managed as two-aged management with 15 percent or more of the original stand basal area retained in groups of trees or trees dispersed across the unit to meet multiple objectives. Approximately 132 acres would have harvest and 41 acres would be retained as groups of trees contributing to two-aged management objectives within or adjacent to the harvested acreage.

**Table 3T-8. Proposed Harvest by Prescription and Existing Condition Wind Risk: Alternative 5**

<b>Prescription (does not include deferral acres)</b>	<b>High Risk</b>	<b>Moderate Risk</b>	<b>Low Risk</b>
<b>Even-aged Clearcut</b>	383	103	165
<b>Two-aged Clearcut with Reserves</b>	17	24	91

Young growth stands are typically more windfirm than the old growth stands they replaced. The regenerated even-aged management stands in high to moderate wind risk areas are expected to be low risk during most of the next rotation. In two-aged stands trees from the former old growth stand will remain either dispersed across the stand or in groups. As a result, it is expected that wind risk will remain approximately the same as in the former stand.

Forest health and productivity would be improved by the removal of diseased trees and through the creation of young fast growing forests.

## **Cumulative Effects**

About 1,460 acres have been previously harvested using even-aged regeneration methods in the Scratchings Timber Sale project area. All previously harvested stands have been certified as regenerated. Windthrow occurred along exposed stand boundaries after harvest. No effort to buffer or stabilize exposed boundaries was made at the time of these harvests. These boundaries have stabilized naturally.

Some stands have been thinned to reduce stocking and increase the growth rate. Others may be scheduled for thinning in the future. Future harvest within the project area is projected by the Forest Plan on the acres that have been determined to be suitable for timber harvest. The timing, amount, and location of future timber harvest would depend on several factors, including the amount of harvest, if any, resulting from this project and the demand for timber in Southeast Alaska.

Scratchings is the only federal timber sale activity planned on Suemez Island in the next five years. Currently, no timber sales are expected on privately held lands on Suemez Island; the University of Alaska does not have any plans for their lands in the next 3-5 years (see Chapter 1 of this Final EIS).

### **3 Environment and Effects**

#### **Watersheds and Fisheries**

The Scratchings Timber Sale project area includes all of Suemez Island. Headwaters originate in the central portion of the island. Twenty-three watersheds and adjacent coastal polygons drain east into Ulloa Channel; south into Meares Passage; and north and west into Bucareli Bay. The coastal polygons are fragments of coastline that are smaller than third-order watersheds.

#### **Climate and Hydrology**

The island is characterized by steep slopes and deep v-notches with high gradient, high-energy stream systems. Low elevation streams on the West Coast of Suemez Island contain fish habitat and fish populations. Most of Suemez Island remains in natural condition with various locations that have been managed for timber harvest.

Climate on Suemez Island is influenced by a semi-permanent low pressure system called the Aleutian Low (USDA Forest Service 2001). This low pressure results in high yearly rainfall. The highest volume of rain occurs during August, September, and October; however, winter storms and spring runoff can result in flooding. Average annual precipitation is between 100 and 200 inches (Jones and Fahl 1994). Most precipitation is in the form of rainfall. Summer high temperatures can exceed 80 degrees Fahrenheit, winter lows can reach five degrees below zero Fahrenheit. The mean annual January temperature is 32 degrees Fahrenheit (Jones and Fahl 1994). Snow can persist on higher elevations during winter.

Severe coastal storms impact Suemez Island, resulting in heavy precipitation and forceful winds through valleys and across slopes. Runoff is extremely efficient due to steep slopes and shallow soils overlying bedrock or glacial till. Runoff is nearly instantaneous during rainfall.



# Scratchings Final EIS



Project Boundary



Saltwater



Watershed Boundary



MMI Class 3 Soils



MMI Class 4 Soils



Streams

Note: This map is compiled from various digital geographic data and may not meet National Map Accuracy Standards.

Figure 3WA-1

### 3 Environment and Effects

Groundwater flow is minimal in the project area due to impervious bedrock with the exception of minor flow through karst conduits. Small and isolated karst features were identified in Turn and East Watersheds (see Geology and Karst section, this chapter). Shallow subsurface flows are common in the project area and are evident in road cutbanks. The interception of these waters at cutbanks generally converts shallow subsurface flow to a surface water flow. The flow path following this conversion is commonly via ditches and across the road through culverts or under bridges.

Excessive sediment deposited in streams can ultimately alter fish habitat. Landslides are a natural disturbance that can expose soils to erosion and increase sediment movement in a watershed. Timber harvesting or road building on unstable hillslopes can increase the risk of landslides. The Mass Movement Index (MMI) is a model used to evaluate the risk of mass movement using soil features and hillslope gradients. Hillslopes that are most unstable are MMI 4 and those that are most stable are MMI 1. Further discussion of the MMI soils is included in the Soils section.

Watersheds that may be sensitive to sedimentation have been identified by using stream characteristics, hillslope characteristics, and management history as variables in a sediment risk model. The model was developed in Region 10 and is used to highlight areas of potential fish habitat impacts resulting from sedimentation (Geier 1998). The model uses channel characteristics to determine stream transport and stream storage potential. It also uses soils and slope information to suggest hillslope stability and road and harvest information to indicate percentage of watershed potentially affected by erosion (Prussian, 2005). Watersheds that are characterized by high transport potential (TPI) and high storage potential (SPI) would be affected by sedimentation greater than those with low transport and low storage potential. Results suggest potential sedimentation concerns in Dolores, Refugio, Arena, and Santa Cruz Watersheds (greater than or equal to 1.5 Storage Potential Index-SPI). Arena has had no past, present, or proposed management activities and is affected only by natural disturbances. Dolores, Refugio, and Santa Cruz have had timber harvest and road construction (Table 3WA-3). Field reconnaissance and Proper Functioning Condition Assessments (PFC) confirmed high volumes of management caused erosion and sedimentation in the Dolores Watershed (Prussian, 2005). The erosion observed in Refugio and Santa Cruz Watersheds was less than Dolores and sedimentation was not a concern.



## Stream Value Classes

Stream value classes (stream classes) are mapping units that indicate levels of habitat use by fish populations. Boundaries are delineated according to the following criteria, as described in the Forest Plan (4-8) and in the Aquatic Habitat Management Handbook (FSH 2090.21).

- **Class I** - Streams and lakes with anadromous or adfluvial fish or fish habitat; or high quality resident fish waters; or habitat above fish migration barriers known to be reasonable enhancement opportunities for anadromous fish.
- **Class II** - Streams and lakes with resident fish or fish habitat and generally steep (6-15 percent or higher) gradient (can also include streams with a 0-6 percent gradient) where no anadromous fish occur, and otherwise not meeting Class I criteria. These populations have limited fisheries values and generally occur upstream of barriers or have other habitat features that preclude anadromous fish use.
- **Class III** - Perennial or intermittent streams with no fish populations but which have sufficient flow, or transport sufficient sediment and debris, to have an immediate influence on downstream water quality or fish habitat capability. These streams generally have bankfull widths greater than 5 feet and are highly incised into the surrounding hillslope.
- **Class IV** - Other intermittent, ephemeral, and small perennial channels with insufficient flow or sediment transport capabilities to have immediate influence on downstream water quality or fish habitat capability. These streams generally are shallowly incised into the surrounding hillslope.
- **Non-streams** - Rills and other watercourses, generally intermittent and less than 1 foot in bankfull width, little or no incision into the surrounding hillslope, and with little or no evidence of scour.

Water quality of Class III streams is important due to their connectivity to fish streams and habitat. Numerous studies suggest the potential for impacts in the headwater areas to affect downstream processes and ecosystems (May and Gresswell, 2003, Gomi et. al., 2002). To reduce the risk of these downstream effects, Riparian Management Area (RMA) buffers are prescribed along Class III streams as per Forest Plan standards and guidelines. Additional buffer width is recommended where moderate or high windthrow risk has been identified. Nine miles of Class III streams exist in the Dolores Watershed. The Arena, Meares, Refugio, and Santa Cruz Watersheds each have more than five miles of Class III streams.



### 3 Environment and Effects

The project area contains 69 acres of lakes. More than half of the lake acreage is in Arena Watershed where seven small lakes accumulate runoff from the upper elevations and flow into Class III streams (Table 3WA-1). The only lake in the project area that contains fish habitat is located in the north-central portion of Arena Watershed. No harvest or roading has occurred in this watershed.

Aquatic productivity, and ultimately fish productivity can be estimated by the length, area, and quality of habitat. Arena, Harbor, Meares, Refugio, and Dolores Watersheds all have greater than five-miles of fish habitat (Table 3WA-1). These streams have productive floodplains with riparian areas that contribute shade, nutrients, and exchange of flows. Past management along the mainstem of Dolores Watershed removed vegetation in riparian areas and utilized the stream for log transport. Past management activities have resulted in higher rates of windthrow, increased landsliding, and erosion of v-notches (Prussian 2005). The resulting sediment has reached productive fish streams in Dolores Watershed.

Recovery of stream function occurs naturally through time. The rate of recovery depends upon the extent of impacts and cumulative management. Stream reaches that have been impacted by past harvest are recovering naturally; however, Dolores Watershed is experiencing a slower rate of recovery.

Fish passage concerns have been identified on Road Condition Surveys (RCS) where blocked, undersized, and poorly placed culverts; or other road design; or maintenance problems have inhibited fish passage. Culverts identified with fish passage problems are known as “red pipes” in the RCS. Twenty-two red pipes have been identified on Suemez Island. Five of the red pipes are on Class I streams with anadromous fish. Seventeen are on Class II streams with resident fish. These and other road problems, including cutbank failures, fillslope failures, and landslides, are listed in the Suemez Island Watershed Assessment (Prussian 2005).

Roads used for this timber sale would be upgraded to provide transportation for the silvicultural activities of this project, reduce sedimentation, and remove sediment and wood from plugged culverts. Culverts that are currently inhibiting fish passage (red pipes) along roads used for this project would be removed upon completion of the project, to improve fish passage. Issues identified along other road segments in the project area would be maintained according to the annual maintenance schedule.

A road maintenance contract scheduled for 2007 will store about 6 miles of road, remove about 70 pipes, and reduce the risk to fish habitat along National Forest System (NFS) Road 1080000 in the eastern portion of the project area. This section of road is not planned for use in the Scratchings Timber sale. The pipes that are scheduled for removal include 16 fish culverts of which 11 have been identified as 'red pipes'. This contract will remove 50 percent of the red pipes that have been identified on Suemez Island.

### **Riparian Management Areas and Windfirm Buffers**

Riparian Management Areas (RMAs) are the areas adjacent to streams and lakes that transition from the aquatic to the vegetative environment. Forest Plan Standards and Guidelines require that RMAs be delineated according to stream value classification and channel type process groups. Protection standards are defined for harvest activities and activities associated with road building. Riparian Management Areas are delineated for streams within or adjacent to proposed harvest units according to the following guidelines:

In order to assure protection of riparian habitat, harvest plans incorporate a buffer zone of no less than one hundred feet in width on each side of all Class I streams, and on those Class II streams which flow directly into a Class I stream, within which commercial timber harvesting shall be prohibited (TTRA 1990). Additional measures are taken to protect streams based on stream type process group classification (Forest Plan, pages 4-53 through 4-73). For example, the incised channel side slopes, or V-notches, along HC channels are considered RMA's (Forest Plan, 4-62). The Forest Plan (4-62) allows no programmed commercial timber harvest within the RMA, defined as the V-notch (side-slope break). Riparian management areas are delineated in unit maps and defined in unit cards.

The Forest Plan standards include additional measures providing reasonable assurance that RMAs are windfirm. Where the risk of windthrow is moderate or greater (Sheets 2007), RMAs are protected by leaving a variety of measures including unit design and silvicultural prescriptions. Those RMAs that are still deemed to need RAW are protected by an additional buffer of windfirm trees standing in the area immediately adjacent to the RMA. A windthrow risk assessment and map were developed for Suemez Island (Sheets 2007). The risk analysis utilized recent science findings, field reconnaissance, and GIS information to identify low, moderate, and high risk areas for windthrow. RMAs that were identified as moderate or high risk of wind damage were recommended for additional RAW buffer width to assure windfirmness.

### **3 Environment and Effects**

Unit Cards and maps in the Scratchings project record (and in the Record of Decision if a decision to harvest is made) show the specific locations of RMAs and provide instructions for specific mitigation measures designed to protect water quality and fish habitat, including measures to assure the windfirmness of RMAs. Widths of windfirm buffers will be specified on the ground using an inter-disciplinary team during unit layout.

#### **Existing Condition of Individual Watersheds**

Suemez Island includes 23 third-order watersheds that have been delineated using field verified and GIS stream information. The watersheds are between 116 and 3,848 acres in size and have at least a third-order stream network. Additional areas that lie between third-order watersheds, and drain directly into the saltwater, are considered coastal polygons. The following section includes descriptions of individual watersheds and past management activities in areas where proposed actions of the Scratchings Timber Sale project are a concern. Additional watersheds are discussed in the Suemez Island Watershed Assessment (Prussian 2005).

Watershed characterization in the following section includes existing condition and effects of past management. Harvest area is discussed in terms of acres, and road length is displayed in miles. System and temporary roads are combined in this section as total road length and road density.



**Table 3WA-1. Surface Waters and Riparian Management Area per Watershed in the Suemez Island Project Area (see Figure 3WA-1)**

<b>Watershed</b>	<b>Size*</b>	<b>Streams**</b>				<b>RMA**</b>	<b>Lakes</b>
Name	(acres)	Class I (miles)	Class II (miles)	Class III (miles)	Class IV (miles)	(acres)	Size (acres)
Adrian	493	0.6	0.7	0.9	0.1	51	0.1
Arena	3,848	5.1	3.5	5.1	0.1	366	35.7
Baker	981	0.7	2.3	3.8	2.4	113	0.4
Beacon	239	0.0	0.7	0.4	0.8	21	0.1
Bocas	477	1.9	0.1	1.4	0.1	69	0.1
Bucareli	577	0.9	0.1	2.3	0.1	51	0.1
Dolores	2,150	3.1	3.9	9.0	5.2	273	0.5
East	1,183	1.2	1.3	3.0	0.0	103	0.0
Gem	593	0.4	0.7	0.7	0.3	36	0.1
Harbor	1,903	3.9	2.8	1.2	0.1	194	0.2
Headwaters	352	0.1	0.1	1.6	0.5	22	0.1
Indiana	824	1.0	3.5	2.7	0.9	137	7.4
Lotana	2,010	1.4	1.2	3.5	0.1	112	1.9
Meares	2,105	0.5	5.6	5.3	0.1	203	3.2
Mini	81	0.1	0.1	1.0	0.9	12	0.1
North	981	1.3	1.6	2.9	4.2	101	0.0
Refugio	3,128	3.7	4.7	7.7	2.4	318	5.1
Santa Cruz	1,123	1.8	1.1	5.1	1.4	134	0.1
State	416	0.6	0.5	1.5	0.1	45	0.1
Turn	806	0.1	0.7	2.7	1.3	50	0.1
Verde	337	0.2	0.5	1.8	0.7	34	0.1
Waterfall	441	0.2	0.6	1.2	0.1	37	0.1
West	1,129	1.7	3.1	1.5	0.8	144	1.2

\* This table includes information relative to watersheds and does not include coastal areas (see figure 3WA-1)

\*\* All Stream totals less than 0.1 were rounded up to 0.1.

\*\*\* RMA refers to Riparian Management Area.

### **Dolores Watershed**

Dolores Watershed is located in the northern portion of the project area and flows into Port Dolores Bay. The watershed is composed of quaternary sediments in the valley bottom, calcareous greywackes mudstones, and siltstones in the middle elevations, and volcanic conglomerates in the headwaters. Runoff is extremely efficient with almost six miles per square mile of watershed stream density. Class III and IV streams extend nearly to the top of the watershed at almost 1,300 feet elevation. Cumulative effects of erosion and sedimentation resulting from windthrow, landslides, past harvest and roads suggest sensitivity to management activity. These cumulative effects in

### 3 Environment and Effects

Dolores Watershed are identified in Issue 2, and were used to develop Alternative 4.

The watershed is round in shape with a branching stream pattern. The mainstem creek flows mostly northwest with three contributing tributary streams. A sub-watershed flowing north drains into the mainstem approximately one mile from the estuary. Fish stream length is greater than seven miles, with about three miles of anadromous (Class-I) stream and about four miles of resident (Class-II) fish stream (Table 3W-1). The Geier Model suggests potential risk to fish habitat due to high transport potential (0.14 TPI) and high storage potential (2.21 SPI) compared to other watersheds in the project area.

Steeply sloping and weathered bedrock in the mid-upper elevations of the watershed, and glacial till soils in the middle and lower portions of the watershed, result in unstable soil conditions. Previous roading and harvest on these slopes has accelerated the landslide activity and contributed to cumulative erosion and sedimentation. Sedimentation has led to aggraded streams.

Past harvest that occurred along the mainstem creek more than 40 years ago removed large trees from the floodplain riparian area that extends from the estuary to less than one mile upstream. This harvest resulted in long term impacts to stream function and fish habitat. Alder regeneration dominates the riparian area along this stream corridor which has limited the conifer growth. Direct and indirect effects of this past harvest include increased sediments in the channel; increased channel width; decreased channel depth; and loss of channel complexity. A total of 327 acres have been harvested in the last 30 years and road length totals 5.3 miles. About 19 percent of the watershed has been harvested. Fifteen percent has been harvested within the last 30 years.

More recent harvest occurring less than 30 years ago and mid-slope roading across hillslopes resulted in sedimentation from windthrow and landslides. Six of the landslides resulted from road problems and eight began on unstable soils in past harvest units. Thirty-one landslides have been identified in the watershed. Three landslides resulted in direct sediment transport to streams with fish habitat. Four landslides were deposited in Class III and IV streams and resulted in indirect sediment transport further downstream. Erosion from management related landslides account for 40 percent of the sediment source areas in the Dolores Watershed (Mayn 2005). Watersheds adjacent to Dolores have experienced the same weather patterns and have not experienced the increase in landslides seen in Dolores, although numerous other factors may be involved. Increased

sedimentation combined with a lack of large woody debris in the lower floodplain reach of riparian area has inhibited the streams ability to recover naturally in a reasonable period of time.

Proper Function Condition Assessments of all three tributaries and the mainstem creek in Dolores Watershed show loss of fish habitat (see Suemez Watershed Assessment, Appendix A, Prussian 2005). Assessments indicated a lack of large woody debris in identified floodplain reaches; increased sedimentation; accelerated erosion due to landslides; and a lack of channel complexity. Failed (windblown) stream buffers have reduced the future availability of large woody debris; reduced bank stability; and resulted in increased sedimentation in the stream. The extent of these effects and the condition of the upslope areas noted in field reconnaissance suggest the channel will further degrade prior to improving. This downward trend is a concern for existing and future fish habitat along a portion of the mainstem of Port Dolores Watershed.

Windthrow is common in Dolores Watershed from a southeasterly wind and has accelerated in areas adjacent to past harvest units. Approximately 50 percent of 40 acres along the southwesterly-facing hillslope have suffered wind damage. This has resulted in exposed soils and increased erosion. Small areas of windthrow are productive in terms of forest ecology; however, the accelerated rates of windthrow following harvest in the Dolores Watershed has exceeded natural conditions and resulted in increased sedimentation.

### **Headwaters Watershed**

The Headwaters Watershed is a small 261-acre watershed located in the eastern part of the project area, north of the LTF in Port Refugio. Relatively high stream length, steep hillslopes, numerous v-notches, and high stream density characterize this watershed, resulting in high erosion potential. The few acres of unstable soils are limited to a central watershed area where v-notches culminate. Most of the watershed stream length is Class III and IV transport channel, with less than a half-mile of fish stream. Results from the Geier model suggest little risk to fish habitat due to moderate transport potential (0.04 TPI) and minimal storage potential (0.03 SPI) compared to other watersheds in the project area.

Past harvest in Headwaters Watershed totals 95 acres. Due to the small watershed size, this amount of harvest results in 36 percent of the watershed area harvested in the last 30 years, and about 23 percent of the Riparian Management Area harvested. Areas of exposed soils have resulted in erosion, especially in 2 large v-notches, and several landslides have occurred since harvest. Road length totals about two



### 3 Environment and Effects

miles and accounts for a density of four miles of road per square mile. The harvest and road density are high; however, excess sediment from past activities has been transported through the watershed.

Erosion potential is considered when designing roads. The watershed is southeast facing and readily exposed to high winds. Stream buffers are necessary to retain soils and stream function in the v-notch, headwater areas. Additional harvest and road crossings are avoided or carefully designed within and adjacent to Class III streams.

#### **Mini Watershed**

The Mini Watershed is the smallest watershed at 116 acres, located in the central portion of Suemez Island. This watershed has a high drainage density and flows into Port Refugio. Total stream length is approximately 2 miles including 0.12 miles of Class II stream length and no Class I stream.

The entire stream length is transport channel with limited to no potential for sediment storage. Hillslopes are relatively gentle in this watershed with few steep slopes in the V-notch areas. The few acres of unstable soils are limited to a central watershed area where v-notches culminate and pose a risk to slope stability. Results from the Geier model suggest little risk to fish habitat due to no transport potential (0.00 TPI) and no storage potential (0.00 SPI).

Past harvest in Mini Watershed is less than one acre and total road length is 0.14 miles. No harvest or road concerns have been identified in this watershed.

The watershed is southeast facing and readily exposed to high winds. RMA buffers are essential to retain soils and stream function along the Class III streams.

#### **West Watershed**

The West Watershed covers 1,129 acres on the western portion of Suemez Island. This watershed flows into Port Santa Cruz. An anadromous and resident fish stream extends the length of the watershed, with several tributaries draining the central portion of the watershed. Steep hillslopes between the two volcanic flows, contribute to the development of unstable soils. These soils cover half of the watershed and extend downslope, to the stream. Steep forested wetland dominates the hillslopes in this watershed with the exception of the upper elevation volcanic area where emergent short sedge and alpine muskeg dominate the landscape. Anadromous fish inhabit 1.7 miles of stream and resident fish extend an additional 3.1 miles upstream. Results from the Geier model suggest potential risk to fish

habitat due to moderate transport potential (0.08 TPI) and high storage potential (1.15 SPI) compared to other watersheds in this project area.

Both timber harvest and roads have affected this watershed by exposing soils to erosion and contributing sediment from roads. Past harvest units in the middle portion of the watershed, on both north and south slopes, cover 184 acres or 16 percent of the watershed area and include about 6 percent of the RMA. Harvest has occurred upslope of the Class II resident fish stream and adjacent to three segments of Class III stream. Buffers were placed on the Class III streams to protect water quality. About 40 percent of the stream buffer on the northern unit has windthrown. This failure has resulted in eroding side slopes and sediment transport downstream. The effects of this sedimentation have impacted the function of the Class III stream; however, there is little evidence of sedimentation in the downstream fish habitat. The minimal sedimentation that has reached the fish stream has not altered the structure or function of the channel.

Total road length extends across about 5 miles of the watershed and accounts for the 3 miles per square mile of watershed road density. Six stream crossings along the road include four Class III and two Class II stream crossings.

### **Verde Watershed**

Verde is a small, 427-acre coastal area, centrally located in the project area. Verde lies between Turn and Headwaters Watersheds and flows into Port Refugio. Verde has few wetland acres and limited stream length as a low elevation watershed. Most of the watershed runoff flows into a stream network on the northern part of the watershed with the exception of a low elevation, Class III/IV drainage that flows into the salt water south of the main drainage. The length of fish stream is limited to less than one mile with a small section catalogued as anadromous habitat. The two miles of Class III stream in this watershed are steep and flow directly into an anadromous fish stream. Verde has no MMI 3 and MMI 4 soils. Hillslopes appear to be stable in the natural condition. Bedrock geology is Devonian greywackes, mudstones, and siltstones.

Timber harvest and roads have altered vegetation in the eastern portion of the watershed, adjacent to the fish stream. Fifteen percent of the watershed area has been previously harvested for timber, including about 8 acres (23 percent) of the RMA. More recent harvest units have included stream buffers, which have withstood winds and remain intact, providing shade and future wood for the stream and riparian area. The past harvest units are on low elevation hillslopes, and show no sign of excessive erosion. Results from the Geier model suggest

### 3 Environment and Effects

little risk to fish habitat due to low transport potential (0.02 TPI) and moderate storage potential (0.05 SPI) compared to other watersheds in this project area.

#### **Refugio Watershed**

Refugio is the second largest watershed in the project area. Refugio is centrally located and extends north and west covering 3,128 acres. The western portion of the watershed extends to within one mile of the western coast of Suemez. Runoff flows into Port Refugio on the eastern side of the island. The northern portion of the watershed drains runoff efficiently through a high density of Class III channels flowing into a Class II stream, which flows south into the central portion of the watershed. Three tributaries in the central portion of the watershed flow into mainstem Class II streams, continue south, then east before joining a Class I tributary and flowing into Port Refugio. Class I streams total about four miles in length, mostly in the southern portion of the watershed, and Class II streams extend about 5 miles throughout the watershed.

Steep slopes are limited to the northern portion of the watershed, where high gradient streams, and unstable soils dominate. The central and southern portion of the watershed is relatively flat and contains no unstable soils. The watershed is mostly forested wetlands, with scattered clusters of emergent short sedge in the southern areas. Bedrock geology is a mixture of Devonian limestone and volcanics. No karst or caves were identified in the interbedded limestone.

Timber harvest and roads have exposed soils and contributed small quantities of sediment to the streams. The past harvest units total 195 acres (6 percent) of the watershed area, including about three percent of the RMA. Several past harvest units are located in the northern part of the watershed and a small harvest unit is located in the central portion of the watershed. Most of the harvested area is on low gradient, low elevation areas. Portions of two harvest units extend into the headwaters, where steep slopes and numerous Class III streams runoff. A landslide occurred adjacent to one harvest unit in the northern portion of the watershed. This slide contributed sediment to the Class III channel, but the sediment pulse did not extend downstream to the fish stream. The Class III channel is flushing these sediments and re-establishing its channel condition.

Additional timber harvest or road construction along the southeast facing hillslope in the northern portion of this watershed could increase the risk of sedimentation due to the high density of streams, steep hillslopes, and extensive unstable soils. Soil reconnaissance was used to identify and remove portions of the hillslope that were not



suitable for timber harvest and roading. Results from the Geier model suggest potential risk to fish habitat due to moderate transport potential (0.06 TPI) and high storage potential (1.50 SPI) compared to other watersheds in this project area.

### **Santa Cruz Watershed**

Santa Cruz Watershed covers 1,123 acres, lies along the western shore of Suemez Island and drains into Santa Cruz Bay. Watershed characteristics include steep, unstable hillslopes; forested wetlands; and a moderate density of streams. Most of the nine miles of stream are steep with just under three miles of fish stream. Unstable soils extend over 77 percent of the watershed area and suggest concern for harvest and roads.

Timber harvest and roads have exposed soils and resulted in short segments of stream sedimentation. Past harvested areas include three units totaling 120 acres (11 percent) of the watershed area and about 4 percent of the RMA. The harvest unit in the central portion of the watershed shows no evidence of excessive erosion or sedimentation; however, the other two units are along steep unstable hillslopes and have resulted in erosion and downslope sedimentation. Bedrock benches captured the sediment from small landslides and exposed soils in the northern unit. The southern unit has several v-notch landslides and exposed areas of soil that have entered Class III channels. Sedimentation from these failures has not reached the downstream anadromous fish habitat. Additional erosion may result in excess sediment in the fish stream. Results from the Geier model suggest potential risk to fish habitat due to moderate transport potential (0.05 TPI) and high storage potential (1.50 SPI) compared to other watersheds in this project area.

## **Environmental Consequences**

### **Potential Effects to Watershed**

#### **Introduction**

This section describes the processes by which timber harvesting and road building affect water yield and water quality, and develops the rationale used in evaluating the effects of the proposed activities. Alaska Department of Conservation (ADEC) determines and regulates the Alaska Water Quality Standards for surface waters (ADEC 2003). These standards cover drinking water and water serving as fish habitat. No drinking water streams are present in the project area. The ADEC also maintains a list of impaired water bodies (303d). No impaired water bodies are located in the project area. A discussion of the effects predicted for each alternative follows in the next section.

### 3 Environment and Effects

Harvests have taken place from 1955 to 1962 and from 1985 to 2002. Past harvest units are spatially dispersed across 14 watersheds. Nine watersheds have had no timber harvest, and 10 watersheds have had less than 100 acres of timber harvest. Watersheds Dolores, Refugio, Santa Cruz, and West have had greater than 100 acres harvested.

To identify risk of cumulative effects, the Forest Plan Final Environmental Impact Statement recommends a watershed analysis when greater than 20 percent of a watershed has been harvested within a 30 year period. A watershed assessment has been completed for Suemez Island (Prussian 2005). This assessment was used for planning and alternative development of this project. The watershed assessment is available in the planning record.

Sediment sources such as landslides and windthrow have been identified in many Suemez Island watersheds that have experienced harvesting. These effects are small in scale in most watersheds and do not affect the overall function of the watershed. In Dolores Watershed these impacts have affected hillslope and stream function (see individual watershed section).

Road analysis in this section includes both system and temporary roads. These roads extend across the northern and western portion of the Scratchings Timber Sale project area and into 13 different watersheds. The existing road system totals 37 miles of road, most of which were built in the mid 1980s and early 1990s.

Road densities can be used to generalize potential impacts in a watershed. Special attention should be given to watersheds with high road densities; road locations along unstable hillslopes; or those with a high density of stream crossings. Total road densities on Suemez range between zero and about four miles per square mile. Headwaters Watershed has the highest road density at 4 miles per square mile.

A Road Condition Survey (RCS) of drainage structures on existing roads within the project area was completed between 2000 and 2003. This inventory provided data on existing fish passage barriers, sediment sources, and general trends in the project area. There are currently 22 'red pipes' inhibiting fish passage, three landslides across the road, one plugged Class III culvert and several unstable road locations. Specific road concerns and restoration opportunities are listed in the Watershed Assessment (Prussian, 2005). Information from the roads inventory is being used for improving road drainage, road erosion, and fish passage concerns.

Guidelines for fish passage through culverts are specified in the Aquatic Habitat Management Handbook (FSH 2090.21). The guiding

criteria for culvert design is to allow for natural migration by adult and juvenile fish through the culvert during flows equal to or less than the discharge predicted to occur two days before or after the mean annual flood. The Tongass National Forest designs culverts on fish streams to simulate the average bankful width and gradient of the stream. Design standards also call for culverts on fish streams to be sunk into the stream bed, for the bottom of the culvert to be lined with natural substrate and, on steep streams, the installation of baffles within the culvert is required to create flow conditions that allow for fish passage.

### **Water Yield**

Watersheds function to collect, store, and deliver water to stream systems. Changes in the collection and storage of water within a watershed can affect the amount of water delivered to streams, and the timing of delivery. Timber harvest affects the collection and storage of water primarily by reducing the interception of precipitation by vegetation; by increasing snow loading in forest clearings; and by altering transpiration. Roads and road ditches can affect water storage capacity in the soil mantle by causing soil compaction and the interception of subsurface flow (Jones and Grant 1996; Jones et al. 1999; Jones 2000).

Transpiration during the growing season reduces the amount of water moving through the soil toward streams. Timber harvest interrupts transpiration, increasing the amount of water available for stream discharge. Transpiration rates eventually recover to levels equal to, or greater than pre-harvest rates as trees and other vegetation become re-established on a site after timber harvest (Hicks et al. 1991). Full hydrologic recovery in the absence of roads is dependent upon growth rates following harvest. Recovery has occurred between 10 and 30 years in the Pacific Northwest (Jones 2000).

Changes in hydrological processes caused by timber harvesting and road building can affect the annual water yield, and the timing and magnitude of floods. Changes in annual water yield following harvest and road building have been documented in numerous publications and are relative to the percent of a watershed harvested (Keppler and Ziemer 1990; Stedneck 1996; Jones and Grant 1996; Harr 1986). Small peak flow increases have been demonstrated in small watersheds where as little as 25 percent of vegetation has been completely removed in a single entry (Jones and Grant 1996; Beschta et al. 2000; Jones 2000).

The potential for seasonal variation in streamflow is important in areas of fish habitat. Decreased summer flow is an example. A study in Stanley Creek Drainage, less than 100 miles away from this project



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area, has shown increased summer low flows following harvest of 35 percent of a drainage area (Bartos 1989). A follow up to this study, also in the Staney Creek area, suggested that potential increases in runoff following timber harvest may be more closely related to climate than to management (Neal 2000). Keppler and Ziemer noted a potential decrease in summer low flows during regeneration, just five years following harvest (Keppeler and Ziemer 1990).

Recovery of water yield, or timing of runoff, depends upon the rate of regeneration and the cumulative harvest (Hibbert 1967). Harvested areas generally re-vegetate within 25-35 years in Southeast Alaska (Nowacki and Kramer 1998). Runoff may be less during stem exclusion stages of succession when vegetation density is greater than pre-harvest levels. This stage occurs between 35 and 300 years following harvest. Vegetative recovery to pre-harvest condition in terms of evaporation and transpiration rates can take approximately 150-350 years.

Roads can affect runoff by conversion of subsurface flow to streams. Mid-slope roads that cut into the hillslope can intercept subsurface flowpaths; convert subsurface waters to surface waters (McGee 2000); enhance the routing efficiency of surface waters; and extend the channel network, (Wemple et al. 1996). The extent and duration of these road effects is variable and dependent upon the climate regime, density of roads and road crossings, and type of road (overlay or bench).

Past harvest in the Scratchings project area is spatially dispersed across the island and only one watershed has greater than 20 percent harvested area in a 30-year period. Headwaters Watershed has had 36 percent of its watershed area harvested within the last 30 years. This 261-acre watershed is small and has mostly Class III streams. The potential to impact fish habitat is limited due to less than a half-mile of Class I and Class II, habitat in the lower elevations of the watershed. The 2,150-acre Dolores Watershed has more than seven miles of fish habitat. Nineteen percent of the total area has been harvested, with 15 percent being harvested within the last 30 years. The effects of road building and harvest in the lower elevations of Dolores have resulted in the loss of pools, channel complexity, and riparian vegetation near the watershed outlet.

#### **Water Quality**

Primary water quality parameters that can be affected by timber harvest activities are sedimentation and stream temperature. Sediment can be introduced into streams by road erosion, road or hillslope failure, and rain splash on bare soils. Once the sediment is mobilized it

can be deposited directly into streams, or diverted into road ditches that flow into streams.

Road erosion can be chronic and occurs when the road surface material is broken down and particles are transported into surface waters. A higher volume of traffic generally results in higher rates of erosion (Kahklen and Hartsog 1999). This correlation between traffic density and rates of erosion suggest minimal road erosion on Suemez Island except during timber harvest or road building. Road erosion from the Scratchings Timber Sale is expected to be minimal due to minimal traffic, and would decrease following the project activity.

Road construction can result in short term increases in sedimentation and turbidity to streams. The removal of vegetation, exposure of soils and bedrock, and movement of sediments during road construction can lead to increased levels of sediment and turbidity. The risk of these sediments influencing fish streams can be reduced by limiting the number of road crossings and implementing Forest Plan Standards and Guidelines, and BMP's. Plans for construction, reconstruction, maintenance, and site-specific erosion control measures for each road would be developed according to standard project specifications and BMP's. Objectives include maintaining water quality according to the Alaska Water Quality Standards (18AAC 70), and full implementation of BMPs. Road management objectives, construction timing restrictions, and the locations of all new stream crossings within the project area are described in the road cards in the Scratchings project record.

The removal of riparian area vegetation can lead to increased stream temperatures. Logging activities in the Pacific Northwest initiated temperature changes in streams primarily through removal of forest vegetation, which allows for increased solar radiation in the stream (Beschta et al. 2000). A report documenting six years of stream temperature information from both harvested and unharvested streams on Prince of Wales Island showed no significance between streamside harvest and high stream temperatures (Walters and Prefontaine, 2005). The degree to which water temperatures increase generally depends upon the length of riparian harvest; the rate at which the harvest occurs; and the amount of sunlight available. Independent research shows that retaining trees in no-harvest buffers along streams is an effective means of minimizing stream temperature impacts associated with logging (Beschta et al. 2000). Forest Plan Standards and Guidelines reassure that streamside buffers be prescribed along fish bearing streams. Fish streams and Class III streams in the Scratchings Timber Sale include buffers to shade the streams and reduce the risk of increased stream temperature.

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The Tongass National Forest addresses the issue of water quality by incorporating Best Management Practices (BMPs) into the design of proposed management activities and by protecting landslide prone hillslopes and Riparian Management Areas from harvest. Road location is carefully designed to avoid steep hillslopes and minimize stream crossings. Monitoring of BMPs on the Tongass demonstrates that BMPs are effective at maintaining Alaska Water Quality Standards for suspended sediments and turbidity (USDA Forest Service 2002).

#### **Direct and Indirect Effects**

##### **Alternative 1 (No-action Alternative)**

No timber harvest would occur in the No-action Alternative, no roads would be built, and road improvements, storage, and red pipe removal would be done according to the annual maintenance schedule. Recovery of water yield and water quality would continue at existing rates. This alternative would have the least cumulative effects compared to all the action alternatives.

##### **Effects Common to All Action Alternatives**

All of the action alternatives increase harvest and roaded areas. Increased harvest area and road length pose a risk to habitat degradation. The various alternatives have been developed to meet or exceed standards and guidelines for risk to watersheds and fish habitat. The following discussion describes the expected impacts and identifies the degree of risk associated with the proposed action.

All of the action alternatives for this timber sale could result in low intensity, short-term sedimentation increases. Levels of increased sedimentation depend upon the acreage of harvest; length of road; and location of harvest and road. Proposed harvest ranges between 760 and 1,565 acres within the 1,919 unit acres for the different alternatives. Proposed new road length varies between 7 and 19 miles including system and temporary road. New road construction would result in short term increases in sedimentation and increased risk of inhibited fish habitat.

Existing road lengths used for project activity would be upgraded to provide road stabilization and improved drainage. The road upgrades may have small increases in sedimentation over a short duration; however, these improvements should improve the long term sedimentation by improving drainage and stabilizing the road surface. Culverts inhibiting fish passage along these roads would be removed following harvest activity.



Road storage following harvest activity includes 11 miles of road in all action alternatives. This storage activity would result in a short term increase in sedimentation followed by long term reduced risk of sedimentation, and inhibited fish passage.

Increased sedimentation can be expected with an increase in harvest area and road length. Using the Geier Model, the action alternatives for the Scratchings Timber Sale project area could increase sediment transport potential (TPI) across the project area between 0 and 28 percent over the No-action Alternative. The following measures minimize risk:

- Maintain buffers on Class I, Class II, and Class III streams as directed in the Forest Plan.
- Avoid steep, unstable slopes
- Prescribe harvest methods and road construction techniques that minimize the risk of slope failure

These guidelines have been incorporated into each action alternative. None of the alternatives are expected to have a major effect on fish habitat or water quality.

Additional stream crossings along Class I and Class II streams would increase the risk of inhibited fish passage. The action alternatives would include between 2 and 12 fish stream crossings along 7 to 19 miles of proposed system and temporary road (Table 3WA-2). Fish passage will be provided along all newly constructed road lengths. Inhibited fish passage identified along existing roads would be improved after harvest.

**Table 3WA-2. Number of Existing and Proposed Stream Crossings**

Stream Classes	Existing Stream Crossings*	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Class I	10	0	5	1	0	1
Class II	24	0	6	4	1	3
Class III	23	0	24	16	5	10
Class IV	46	0	47	45	31	30
<b>Total</b>	<b>103</b>	<b>0</b>	<b>82</b>	<b>66</b>	<b>37</b>	<b>44</b>

\*these numbers are taken from the field information gathered in the Road Condition Survey (RCS), and may be more numerous than road crossings indicated on GIS.

The volume and timing of stream flow in most of the project area watersheds would not be affected by the action alternatives. Headwaters, Dolores and Verde watersheds would have the highest harvest density following any of the action alternatives and the greatest

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risk for altered water yield. Alternative 2, which proposes the greatest harvest acreage, exceeds 20% cumulative watershed harvest density in the last 30 years, in seven watersheds. These watersheds include Dolores, Headwaters, West, Mini, Verde, Beacon, and Baker.

The effects on aquatic habitat resulting from altered water yield would depend upon the size of the watershed and the amount of habitat. Headwaters, Mini, Beacon, and Verde Watersheds total less than three percent of the project area and total 0.3 miles of Class I, and 1.4 miles Class II stream (Tables 3WA-1 and 3WA-3). West and Baker Watersheds are 981 and 1,129 acres in size, contain 0.7 and 1.7 miles of Class I habitat, 2.3 and 3.1 miles of Class II habitat, and range between 21 and 23% harvest density for the action alternatives. Dolores Watershed extends over 2,150 acres, contains 3.1 miles of Class I and 3.9 miles of Class II habitat, and ranges between 22 and 35% harvest density for the action alternatives (Table 3WA-3).

**Table 3WA-3. Percent Watershed Harvest in the Past 30 Years**

Watershed *	Cumulative Percent Harvested				
	Existing Condition	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Adrian	6	9	9	9	9
Arena	0	0	0	0	0
Baker	0	21	0	0	0
Beacon	0	23	0	0	0
Bocas	6	6	6	6	6
Bucareli	0	12	0	0	0
Dolores	15	35	29	22	29
East	6	6	6	6	6
Gem	0	10	0	0	0
Harbor	0	0	0	0	0
Headwaters	36	49	49	47	49
Indiana	0	12	12	0	0
Lotana	0	0	0	0	0
Meares	0	0	0	0	0
Mini	1	25	25	25	19
North	5	19	19	19	12
Refugio	6	9	9	9	9
Santa Cruz	11	19	19	19	19
State	0	3	0	0	0
Turn	8	15	15	15	15
Verde	15	38	38	35	38
Waterfall	0	0	0	0	0
West	16	23	23	22	18
Total Acres	4	8	6	6	6

\*coastal polygons are not included in this table

Riparian Management Areas (RMA) have been designed for each Class I, Class II, and Class III streams. These site-specific designs are expected to effectively protect water quality and fish habitat. The design of RMAs is described in the unit cards, which can be found in the Scratchings project record.

## **Alternative 2**

Alternative 2 proposes to harvest timber from approximately 1,565 acres and construct about 19 miles of road. This alternative proposes to harvest the most acres of timber and would require the longest length of road. There would be eleven additional fish stream crossings and 24 additional Class III crossings associated with new road construction. Shovel logging is proposed in foot slope portions of two units adjacent to the mainstem of Port Dolores and in one unit that crosses Verde and Turn Watersheds. The remaining units would be logged using helicopter or skyline systems. Helicopters would be used where road access is not feasible.

Road building, bridge construction, and the installation of culverts is expected to temporarily increase sediment delivery to streams. The temporary increase in sediment delivery is not expected to degrade water quality or fish habitat. Design measures described in the Scratchings project record, including the implementation of BMPs, are expected to maintain water quality within standards established by the State of Alaska.

Alternative 2 poses the greatest risk to water quality and fish habitat of all the alternatives. Short-term increases in sedimentation are expected to follow timber harvest and road construction. The increase in sedimentation is greater than the increase predicted in Alternatives 3, 4, and 5. The potential for altered water yield is greatest in Alternative 4 due to the most proposed harvest acres. Seven watersheds would exceed 20 percent harvest within 30 years. Dolores Watershed would result in 35 percent of the watershed harvested within the last 30 years.

This alternative is not expected to negatively affect fish passage through culverts. Newly constructed road crossings on fish-bearing streams would be designed to meet current standards for fish passage, allowing for migration by juvenile and adult fish.

## **Alternative 3**

Alternative 3 proposes to harvest timber from approximately 1,024 acres and construct about 13 miles of road. This alternative proposes to harvest less timber and construct less road than Alternative 2. This alternative proposes to harvest more timber and construct more road than Alternatives 4 and 5. Harvest methods would be the same as those



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prescribed in Alternative 2. The system and temporary road to be constructed would cross five fish streams and sixteen Class III streams.

Road building, bridge construction, and the installation of culverts is expected to temporarily increase sediment delivery to streams. The temporary increase in sediment delivery is not expected to degrade water quality or fish habitat. Design measures described in the Scratchings project record, including the implementation of BMPs, are expected to maintain water quality within standards established by the State of Alaska.

Alternative 3 is expected to result in low intensity and short term increases in sedimentation. This short term increase in sedimentation would be less than Alternative 2 and greater than Alternatives 4 and 5.

The potential for altered water yield is less than Alternative 2, and greater than Alternatives 4 and 5. Five watersheds would exceed 20 percent harvest within 30 years. Dolores Watershed would result in 29 percent of the watershed harvested within the last 30 years.

This alternative is not expected to negatively affect fish passage through culverts. Newly constructed road crossings on fish-bearing streams would be designed to meet current standards for fish passage, allowing for migration by juvenile and adult fish.

#### **Alternative 4**

Alternative 4 proposes to harvest timber from approximately 760 acres and constructs about 7 miles of road. This alternative would harvest less acres and construct fewer road miles than all other action alternatives. This alternative proposes reduced harvest in Dolores and Headwaters Watershed. Helicopter and cable systems would be used to log all but one harvest unit, which would be shovel logged. Alternative 4 would require the shortest road length of all alternatives; no new system or temporary road Class I crossings, one new Class II crossings, and five additional Class III crossings (Table 3WA-2).

This alternative presents the least risk to fish habitat and water quality. Low intensity and short term increases in sedimentation are expected. The potential increase in sedimentation from Alternative 4 activities would be the least of all action alternatives.

The potential for altered water yield is less than Alternatives 2 and 3, and greater than Alternative 5. Although there are fewer harvest acres in Alternative 4, the harvest results in an additional watershed exceeding 20% harvest density in 30 years, compared to Alternative 5.

Alternative 4 results in the lowest harvest density in Dolores Watershed compared to all other action Alternatives. Five watersheds would exceed 20 percent harvest within 30 years. Dolores Watershed would result in 22 percent of the watershed harvested within the last 30 years.

Road building, bridge construction, and the installation of culverts is expected to temporarily increase sediment delivery to streams. The temporary increase in sediment delivery is not expected to degrade water quality or fish habitat. Design measures described in the Scratchings project record, including the implementation of BMPs, are expected to maintain water quality within standards established by the State of Alaska.

This alternative would limit harvest and new road construction in Dolores Watershed in an effort to maximize the protection and promote the recovery of riparian areas and sensitive fish habitat. The proposed harvest area within Dolores would be helicopter logged minus two small units that would use cable logging systems. These two units are located on relatively flat and very stable ground. The limited harvest acres and absence of new road would significantly reduce the potential for added risk to the existing condition of Dolores Creek.

This alternative is not expected to negatively affect fish passage through culverts. Newly constructed road crossings on fish-bearing streams would be designed to meet current standards for fish passage, allowing for migration by juvenile and adult fish.

## Alternative 5

Alternative 5 would harvest timber from approximately 784 acres and construct about 9 miles of road. This alternative proposes to harvest fewer acres and construct less road than Alternatives 2 and 3. This alternative would harvest more timber and construct more road than Alternative 4. Four fish crossings and 10 Class III crossings would be located along new system and temporary road length. Cable logging systems would be used where roads exist. Helicopters would be used in most other units. Shovel logging would be used in two units in Dolores Watershed and a unit in Verde and Turn Watershed.

Road building, bridge construction, and the installation of culverts is expected to temporarily increase sediment delivery to streams. The temporary increase in sediment delivery is not expected to degrade water quality or fish habitat. Design measures described in the Scratchings project record, including the implementation of BMPs, are

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expected to maintain water quality within standards established by the State of Alaska.

This alternative would reduce the risk of sedimentation in roadless areas. Low intensity and short term increases in sedimentation are expected. This increase in sedimentation is greater than Alternative 4 and less than Alternatives 2 and 3. This alternative does not enter roadless areas, yet greater road length and more stream crossings are proposed, resulting in a greater risk to fish habitat, than Alternatives 4.

Alternative 5 has greater harvest acres than Alternative 4, yet results in fewer watersheds exceeding 20% watershed harvest density in 30 years. The potential for altered water yield in Alternative 5 is less than all other Alternatives. Four watersheds would exceed 20 percent harvest within 30 years. Dolores Watershed would result in 29 percent of the watershed harvested within the last 30 years.

This alternative is not expected to negatively affect fish passage through culverts. Road crossings on fish-bearing streams would be designed to meet current standards for fish passage, allowing for migration by juvenile and adult fish.

#### **Cumulative Effects**

##### **Definition of cumulative watershed effects**

Cumulative watershed effects include environmental effects associated with all past, present, and foreseeable future activities occurring within a watershed. These effects could include changes in the collection, storage and discharge of water in streams; changes in the delivery, loading, and transport of sediment and wood in streams; changes in fish habitat quality or availability; or changes in stream temperature. Individual effects must be of sufficient magnitude to be detected at some point offsite, for example downstream from the location of the forest practice, for cumulative effects to be of any consequence (Harr 1986).

##### **Reasonably foreseeable activities**

Possible future projects in the Scratchings Timber Sale project area are summarized in Chapter 3 (Table 3-1). The road storage and red pipe removal contract scheduled for 2007 will improve fish passage, and stream connectivity in Refugio, Harbour, and East Watersheds. Additional cumulative watershed effects that may occur in the future will depend on the rate at which new projects are implemented and the rate at which disturbances from past and present activities recover.



No harvest or road activity is planned for University of Alaska lands located in the State Watershed (see Chapter 1 of this EIS). No plans have been made for this area and activity would probably not occur within the next five years.

### **Cumulative effects associated with the alternatives**

Cumulative effects were assessed in all watersheds. Past timber harvest and roads have resulted in loss of functioning riparian area in the project area. This loss of riparian area is highest in Dolores Watershed (38 acres) and has contributed to degraded fish habitat. These effects are identified in Issue 2, explained in the watershed section of this document, and used to drive the development of Alternative 4.

Headwaters Watershed is the only watershed containing greater than 20 percent of the watershed area in harvested stands younger than 30 years. The action alternatives would result in between four and seven watersheds exceeding 20% harvest in the last 30 years. The specific watersheds are discussed in the direct and indirect effects sections and cumulative effects of water yield are discussed below.

All action alternatives would result in reduced open road lengths and hence reduced cumulative effects to fish habitat and passage. The risk to fish habitat and fish passage is reduced by removing culverts and eliminating the potential for plugged pipes.

### **Alternative 1**

Cumulative effects would be limited to those associated with the maintenance of existing roads, and the regeneration of managed stands that have been harvested in the past under the No-action alternative. No changes in water yield, water quality, sediment delivery to streams, or fish passage are expected beyond those associated with annual road maintenance and naturally-occurring events.

### **All Action Alternatives**

The amount of cumulative harvest and road construction associated with past activities and proposed alternatives are displayed in Tables 3WA-3 and 3WA-4.

Riparian areas will be buffered from proposed harvest using Riparian Management Areas (RMAs). Additional buffer width would be used to provide a reasonable assurance of windfirmness (RAW) where the potential for windthrow is a concern. The use of RMAs will minimize cumulative loss of riparian vegetation in the project area.

The effects of past harvest, landslides, and road failures in Dolores Watershed have contributed to increased sedimentation and loss of fish habitat (see Watershed section and Watershed Assessment). The

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cumulative effect of small increases in sedimentation resulting from future timber harvest or roads could delay stream and riparian area recovery in the Dolores stream system. Units and roads have been designed in each alternative to implement Best Management Practices to minimize sedimentation and avoid unstable slopes. Alternative 4 was proposed to further reduce the risk of increased sedimentation in Dolores Watershed by reducing harvest and road building.

Total road density is highest in the Headwaters and Verde Watersheds at 4.2 and 3.9 total miles per square mile. All alternatives would include an additional 0.1 miles of road in Headwaters and 1.5 miles in Verde Watersheds. The largest increase in total road mileage is proposed for the Dolores Watershed ranging between four and five miles, with the exception of Alternative 4, which proposes a total of 0.71 miles. The largest increase in proposed road density would be Verde Watershed which would result in 5.9 miles per square mile in Alternative 2. All new roads would be designed to facilitate fish passage where needed and to minimize erosion and sedimentation. Traffic levels would be higher during harvest or road construction and are expected to return to pre-harvest levels immediately following project activity.

Inhibited fish passage identified along existing roads would be improved after harvest. 'Red' pipes located on roads other than those used for the proposed action would be improved according to the annual maintenance schedule. All 'red pipes' on Suemez Island are planned for removal with half of them scheduled for 2007 (see the Transportation section of this Final EIS).

Periodic road assessments and maintenance will maintain or remove road drainage locations where plugging or the potential for plugging is evident. No chronic sedimentation is expected from roads. Water quality is expected to continue to meet current standards for sedimentation and fish passage.

The action alternatives propose harvest acreage that could alter the water yield in several watersheds. Cumulative harvest would range between 0 and 49 percent of the watershed acres. Alternative 2 has the highest cumulative harvest with seven watersheds exceeding 20% harvest in the last 30 years (Table 3WA-3). Alternative 4 has the least cumulative harvest with 5 watersheds exceeding 20% harvest within the last 30 years. Alternative 5 has greater cumulative harvest proposed than Alternative 4; however, only three watersheds exceed 20% watershed harvest density following proposed activity in Alternative 5. The highest percentage watershed harvest is proposed for Headwaters, Verde, Dolores, and Mini Watersheds. Except for

Dolores, these watersheds are each less than 400 acres in size and contain less than one mile of fish habitat, combined. The Dolores Watershed is 2,150 acres in size and contains over seven miles of fish habitat. Past harvest and proposed harvest of the Dolores Watershed would result in a harvested density of between 22 and 35 percent. Action alternatives are expected to be of little consequence to fish in Headwaters, Mini and Verde Watersheds because of small watershed size and limited fish habitat. A greater risk to fish habitat exists in Dolores Watershed. A short-term increase in water yield may be detected in these watersheds post harvest. Alternative 4 was developed because of cumulative effects identified in Dolores Watershed. The cumulative risk of water yield that may result from the proposed action has been reduced in Alternative 4 compared to the other action alternatives.

**Table 3WA-4. Existing and Proposed Miles of Total Road Length and Cumulative Road Density by Watershed and by Alternative.**

Water-shed*	Existing Roads		Proposed Length of Road and Cumulative Road Density							
			Alt. 2		Alt. 3		Alt. 4		Alt. 5	
	miles	per sq. mile	miles	per sq. mile	miles	per sq. mile	miles	per sq. mile	miles	per sq. mile
Adrian	0.7	0.9	0.4	1.5	0.4	1.5	0.4	1.5	0.4	1.5
Arena	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Baker	0.0	0.0	1.4	0.9	0.0	0.0	0.0	0.0	0.0	0.0
Beacon	0.0	0.0	0.4	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Bocas	0.5	0.6	0.0	0.6	0.0	0.6	0.0	0.6	0.0	0.6
Bucareli	0.0	0.0	1.8	2.0	0.0	0.0	0.0	0.0	0.0	0.0
Dolores	5.3	1.6	4.9	3.0	4.3	2.9	0.7	1.8	4.2	2.8
East	2.4	1.3	0.0	1.3	0.0	1.3	0.0	1.3	0.0	1.3
Gem	0.0	0.0	1.3	1.4	0.0	0.0	0.0	0.0	0.0	0.0
Harbor	0.9	0.3	0.0	0.3	0.0	0.3	0.0	0.3	0.0	0.3
Headwaters	1.7	4.2	0.1	4.4	0.1	4.4	0.1	4.4	0.1	4.4
Indiana	0.0	0.0	0.5	0.4	0.5	0.4	0.0	0.0	0.0	0.0
Lotana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Meares	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mini	0.1	0.8	0.2	2.1	0.2	2.1	0.2	2.1	0.2	2.1
North	1.9	1.2	1.3	2.1	1.3	2.1	1.3	2.1	0.6	1.6
Refugio	7.8	1.6	1.2	1.8	1.2	1.8	1.2	1.8	1.2	1.8
Santa Cruz	2.0	1.1	0.7	1.5	0.7	1.5	0.7	1.5	0.7	1.5
State	0.0	0.0	0.9	1.4	0.0	0.0	0.0	0.0	0.0	0.0
Turn	3.4	2.7	0.9	3.4	0.9	3.4	0.9	3.4	0.1	2.8
Verde	2.6	3.9	1.4	5.9	1.4	5.9	1.3	5.8	1.6	6.2
Waterfall	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.9
West	4.6	2.6	1.6	3.5	1.6	3.5	0.0	2.6	0.0	2.6

\*The length of road and road density in coastal polygons are not shown in this table.



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### Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation Act (1996) requires that all federal agencies consult with the National Marine Fisheries Service (NMFS) when any project “may adversely affect” essential fish habitat. The Forest Service sent a copy of the Draft EIS to the NMFS which formally started the consultation process. The NMFS has reviewed the Draft EIS and provided comments on the findings of the assessment and made five conservation recommendations pertaining to the project in a letter dated August 25, 2006 (see planning record for letter). The Forest Service has responded to NMFS conservation recommendations with a preliminary letter. The Forest Service has responded further to the conservation recommendations made by the NMFS. These responses can be found in the Response to Comments section (Appendix B) of this Final EIS. The original EFH Assessment from the Draft EIS is included below in this Final EIS to help the reader better understand the consultation process. Because this is a copy of the original assessment, minor corrections to acres of harvest, miles of road, and number of stream crossings are not reflected in this section, but can be found throughout the remainder of this Final EIS.

*The following text is quoted from the Scratchings Draft EIS (June 2006).*

Essential Fish Habitat (EFH) is the water and substrate necessary for fish spawning, breeding, feeding, or growth to maturity. The term “fish” refers to federally managed fish or shellfish species and their prey. Freshwater EFH includes streams, rivers, lakes, ponds, wetlands and other bodies of water currently and historically accessible to salmon. Marine EFH in Alaska includes estuarine and marine areas.

Essential Fish Habitat for Pacific salmon recognizes six critical life history stages:

1. Spawning and incubation of eggs
2. Juvenile rearing
3. Winter and summer rearing during freshwater residency
4. Juvenile migration between freshwater and estuarine rearing habitats
5. Marine residency of immature and maturing adults
6. Adult spawning migration

Habitat requirements within these periods can differ significantly. Any modification of the habitat within these periods can adversely affect Essential Fish Habitat.

### Consultation

Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act states that all federal agencies must consult the

National Marine Fisheries Service (NMFS) for actions or proposed actions that may adversely affect Essential Fish Habitat. The Act promotes the protection of EFH through review, assessment, and mitigation of activities that may adversely affect these habitats.

The Alaska Region, USDA Forest Service and the National Marine Fisheries Service agreed to a procedure for the consultation on August 25, 2000. This Draft EIS provides a description of the proposed action; an analysis of individual and cumulative effects of the action on EFH, the managed species, and associated species; the USDA Forest Service's views regarding effects on EFH; and a discussion of proposed mitigation, where applicable. The formal consultation will start when NMFS receives a copy of the Draft EIS with the Essential Fish Habitat Assessment. NMFS may then respond in writing, whether it concurs with the findings of the assessment or make conservation recommendations. The USDA Forest Service must respond to any recommendations made by NMFS within 30 days. Documentation of the consultation process will be included in the Final EIS.

### **Project Description**

The proposed action alternative for the Scratchings project would allow up to 1,932 acres of National Forest System land, suitable for timber production, to be harvested. Commercial timber harvest is not planned to occur in Riparian Management Areas of special concern to fish (Class I, II, and III streams) under this project. A complete description of the proposed action and all of the alternatives can be found in Chapters 1 and 2 of this document.

Analysis was completed on five different alternatives. Four action alternatives propose between 1,011 to 1,932 acres be harvested. Refer to the Fisheries and Watershed section of Chapter 3 for analysis of resource concerns specific to freshwater Essential Fish Habitat. The EFH portion of this chapter will provide information relating to the marine EFH and will present the mitigations proposed to alleviate the effects of the proposed action on both freshwater and marine EFH.

### **Freshwater EFH**

The Scratchings project area encompasses nearly 185 miles of stream course cataloged in the USDA Forest Service GIS database. Almost 28 miles are Class I streams, providing habitat for populations of coho, chum, and pink salmon. The project area includes about 33 miles of existing roads. USDA Forest Service road condition survey (RCS) data shows 22 stream crossings within the project area that do not meet current USDA Forest Service standards for fish passage. Five of these crossings are located on Class I streams containing anadromous fish

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species. The culverts that do not meet fish passage requirements and located on road systems to be utilized in the implementation of the chosen alternative would be replaced under the timber sale contract. The remaining culverts not meeting fish passage requirements would be removed, replaced or repaired by future projects not directly associated with the Scratchings EIS to ensure adequate fish migration. Depending upon the alternative chosen, up to 20 miles of road would receive maintenance; approximately one mile of existing road would be planned for reconstruction; and up to 19 miles of new road would be constructed (13 miles of National Forest System Road and 6 miles of temporary road). Depending upon the alternative chosen, planned new road construction may cross up to four Class I streams. Some alternatives would involve no new Class I stream crossings. Potential effects on freshwater EFH resulting from the selection of any action alternative include increased peak flows, increased sediment delivery, altered riparian vegetation and disturbed channel integrity that may reduce habitat quality for salmon.

Other fish, numerous birds, small and large terrestrial mammals, marine mammals, and aquatic invertebrates prey upon salmon located in the project area. A decrease in prey populations could directly influence predator species; however, the proposed action is expected to have minimal effects on predator species.

**Table 3EFH-1. Freshwater Life Stages of Pacific Salmon that Could be Affected by Timber Harvest, and Road Construction and Maintenance**

Species	Eggs and Larvae	Juveniles Freshwater (fry-smolt)	Juveniles Estuarine	Adults Freshwater
Pink Salmon	X	X	X	X
Chum Salmon	X	X	X	X
Coho Salmon	X	X	X	X

#### **Marine EFH**

The Scratchings Timber Sale project area has about 66 miles of shoreline bordering EFH for 12 different marine species. A table listing these species and the lifestages that may be affected is given below.



**Table 3EFH-2. Life Stages of Marine Fish that Could be Affected by the Log Transfer Facility (LTF)**

Species	Late Juvenile	Adult
Yelloweye Rockfish	X	X
Sculpin	X	X
Rex Sole	X	X
Walleye Pollock	X	X
Sablefish	X	X
Flathead Sole	X	X
Pacific Ocean Perch	X	X
Pacific Cod	X	X
Dusky Rockfish	X	X
Shortraker & Rougheye Rockfish	X	X
Skate	X	X
Arrowtooth Flounder	X	X

NMFS interactive map can be found at <http://akr-mapping.fakr.noaa.gov>

Primary prey items for marine species that may be affected by the action alternatives based on the Gulf of Alaska Fishery Management Plan (NPFMC 1998) include:

- **Sablefish** feed throughout the water column. Larval sablefish feed on a variety of zooplankton. Juveniles feed primarily on macrozooplankton and euphausiids. Adults are opportunistic feeders. Their main diet is other fish, including salmon fry and pollock. Other food includes benthic invertebrates, squid, jellyfish, and fishery discards.
- **Sculpins** feed mainly near the bottom. Prey items include crabs, barnacles, and mussels. Larger sculpins eat fish.
- **Adult chum, sockeye, coho and pink salmon** are primarily fish eaters, although pelagic crustaceans and squid are also consumed, particularly by pink salmon. Juvenile salmon consume plankton and small crustaceans.
- **Dusky rockfish** have a diet mainly of euphausiids, although larvaceans, cephalopods, pandalid shrimp, and hermit crabs are also consumed.
- **Arrowtooth flounder** feed in gravel-mud substrates near the seafloor. Adults feed on other groundfish. Juveniles feed on euphausiids, crustaceans, amphipods, and young pollock. Larvae feed on phytoplankton and zooplankton.
- **Pacific cod** are omnivorous. Adult cod feed mostly on other fish such as walleye pollock, yellowfin sole, and fishery discard. Young cod feed mostly on invertebrates such as amphipods, crangonid shrimp, polychaete worms, and bivalves.

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- **Skates** feed on bottom invertebrates (crustaceans, mollusks, polychaetes) and fish.
- **Walleye pollock** feed throughout the water column on copepods, euphausiids, young pollock, and other fish.
- **Yelloweye rockfish** eat primarily fish including other small rockfish, herring, sandlance, as well as caridean shrimp, small crabs, and lingcod eggs.
- **Shortraker and Roughey** rockfish feed primarily on shrimp, squids, and myctophids. Juveniles feed on shrimp and amphipods.
- **Pacific Ocean Perch** are overwhelmingly planktivorous, and may eat small shrimp and squids. Juveniles eat mostly calanoid copepods and euphausiids.

#### Log Transfer Facilities

The most recent dive survey for the Suemez Island LTF was completed on June 27, 2001. A report was completed by Alaska Commercial Divers, Inc. following the survey. No areas of continuous bark coverage were found during completion of the dive survey transects. Discontinuous bark coverage was found on 7,426 square feet (17 acres) of the 11,195 square feet surveyed. Bark depth ranges up to 10 inches were reported for the area surveyed. The complete report from the survey is available in the planning record.

During the 2001 dive survey the following species were reported in the proximity of the LTF: clams, crab, eel, crabgrass, halibut, hermit crabs, geoducks, kelp, rock cod, sea cucumbers and sea stars. Observations by divers and knowledge of local biologists additionally establish use of Port Refugio by juvenile and adult chum, pink and coho salmon. Juvenile salmon use the inshore area of Port Refugio during spring and early summer for feeding and predator avoidance prior to migration out to sea. The LTF is about 3,500 feet away from the closest Class I streams draining into the estuary south of the Suemez Island LTF. The largest of these is Refugio Creek, which is located near the head of the bay.

The LTF at Suemez will be rebuilt as part of the project and converted into a barge facility. When rebuilt, the LTF would allow the option to place logs directly into the water to be rafted or loaded on a barge. This option would be maintained for use of the LTF in future small sale opportunities. Although the option of rafting logs or placing them onto a barge will be left to the sale purchaser, recent timber industry practice has been to load logs directly onto barges; alleviating the need for logs to be placed into the water.

## Findings and Proposed Mitigation

### Marine Essential Fish Habitat

The USDA Forest Service's position is that use of the Suemez Island LTF may adversely affect marine EFH in the project area. The potential effects would result from the addition of material to convert the existing beaver slide into a structure fit for barge use and could include small-scale fine sediment deposits on the seafloor which may affect the habitat of marine species in the area. Effects resulting from the use of the existing LTF site on marine EFH could include diminished habitat for managed marine species and their prey due to bark accumulation if log rafts are used. Another potential effect is reduced rearing capability for juvenile salmon due to reduced water quality from bark lechates and shading beneath log rafts and equipment floats. By following the standards and guidelines established in the Forest Plan, implementing applicable Best Management Practices (BMPs) and the mitigation measures described below, the effects on marine EFH would be minimized because:

- Rebuilding the LTF by utilizing the existing footprint will minimize the chance for impacts on habitat because no new sea floor would be covered by material.
- Tidal action partially flushes Port Refugio. By completing the work necessary to rebuild the LTF during the lower half of the tide cycle, the chance for small-scale fine sediment deposits on the sea floor would be minimized.
- All action alternatives are expected to use a barge loading facility that will minimize effects to the marine environment around the LTF. Loading logs directly onto a barge will make it unnecessary to place logs into marine waters and should eliminate the accumulation of bark debris in the marine environment resulting from utilization of log rafts.

### Freshwater Essential Fish Habitat

The USDA Forest Service's position is that harvesting timber near Class I streams and wetlands and reconstruction and maintenance of roads over Class I streams may have an adverse effect on freshwater Essential Fish Habitat. By following the standards and guidelines established in the Forest Plan and implementing applicable Best Management Practices (BMPs) the effects on freshwater EFH would be minimized because:

- All Class I and Class II streams within the project area would be protected by a no-harvest RMA buffer of 100 feet or more (See the Unit Cards in Appendix B for site-specific activities and no-harvest buffers).



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- All Class III streams would be protected by no-harvest RMA buffers to at least the top of the side slope according to the Forest Plan.
- Buffer widths in areas where wind damage has occurred in the past would be increased and additional trees would be left standing to assure resistance to windthrow (See the Unit Cards in Appendix B for locations of increased buffer widths).
- BMPs would be implemented to protect water quality and aquatic habitat for all freshwater streams within the project area (See Appendix B).
- Bridges would be installed on all stream segments that contain fish. New construction of National Forest System Roads would be up to 13 miles depending on which Alternative is chosen. New construction of National Forest System Roads would cross up to 4 Class I streams. All newly constructed National Forest System Roads would be placed in storage after timber harvest is complete.
- Construction of new temporary road could be up to about six miles depending on the alternative chosen. No temporary roads would be constructed across Class I streams.
- About 11 miles of existing National Forest System Road would be placed into storage and two miles of the existing road base would be decommissioned on Suemez Island. All new National Forest System Road constructed would be placed into storage after timber harvest is complete.

The USDA Forest Service believes these mitigation measures will avoid or minimize the negative effects to freshwater Essential Fish Habitat from any of the action alternatives. Significant impact to EFH is likely to occur only from unforeseen events.

#### Conclusions

The USDA Forest Service believes that the Scratchings project may adversely affect EFH. However, by implementing Forest Plan Standards and Guidelines, BMPs, loading logs onto barges, and utilizing other mitigation measures discussed above, the project will avoid or minimize the negative effects of the proposed activities on EFH. Additional impacts to EFH are likely to occur only from unforeseen events such as landslides, debris blockages of culverts, and road failures. A copy of this Draft EIS will be given to NMFS as stated in the agreement, and the USDA Forest Service will continue the consultation process with the National Marine Fisheries Service.

## Soils

This section provides a summary of the soil resources in the project area. Forest-wide Standards and Guidelines for this resource are on pages 4-83 through 4-85 of the Forest Plan. The analysis and results presented in the environmental consequences section are based upon proposed harvest unit boundaries and the overall project area boundary. The analysis for the soils resource uses both temporary and NFS road information. Detailed discussion of the existing condition of Suemez Island can be found in the *Scratchings EIS Soil and Wetland Resources Report, 2005* and the *Scratchings EIS Soil Resource Report Addendum, 2007* in the Scratchings Project Record.

Scoping and comments on the Draft EIS for the Scratchings project identified timber harvest on slopes over 72 percent gradient as a concern related to the management of the soils resource. The Interdisciplinary Team (IDT) also considered effects of the project on soil productivity as a second concern. Scoping and Draft EIS comments also identified concern regarding the amount of erosion (from all sources) and sedimentation in the Dolores Watershed. The downslope effects of soil disturbances on water quality are discussed in the Watersheds and Fisheries section of this chapter.

The IDT identified two key indicators to measure the effects of the alternatives on the soil resource:

- Maintenance of soil productivity as measured by the amount of soils left in a detrimental soil condition
- The amount of harvest on slopes over 72 percent gradient

USDA Forest Service Region 10 Soil Quality Standards (R-10 Supplement 2500-92-1) have been established to meet the direction in the National Forest Management Act of 1976 and other legal mandates. The guidelines were developed to ensure management of multiple use and sustained yield are achieved without incurring permanent impairment to soil productivity.

Soil resources on the project area have been reviewed using soil survey data and slope data in GIS, aerial photos, and field reconnaissance. Soil survey data has been used for project scale analysis and for describing the project area. Slope data was derived from the 30-meter digital elevation model for the area, and was used to describe slopes of the project area and to focus field reconnaissance. Proposed harvest units and road locations on slopes greater than about 50 percent gradient were field reviewed by the soil scientist to identify areas where slope stability and areas where soil productivity may be affected by the proposed activities. Best Management Practices

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(BMPs) and site specific recommendations for soil and slope protection in harvest units and along road segments are based on field data.

#### **Affected Environment**

The topography of Suemez Island is mountainous with steep slopes and deeply incised, high gradient streams. Soils range from moderately deep, well drained tills that support productive forests to very poorly drained organic soils that support muskeg vegetation. Soil productivity on the project area is primarily a function of soil drainage and in some cases soil depth. Most soils on the project area are covered with an organic mat or duff layer 6 to 10 inches thick. This organic mat prevents erosion of the underlying mineral soil from raindrop impact and supplies many nutrients available for plant growth. Keeping the organic mat in place during management activities is a key to maintaining soil productivity.

Steep slopes are underlain by somewhat poorly drained to moderately well drained soils; they are shallow to bedrock or dense glacial till at lower elevations. Windthrow is the dominant disturbance factor on slopes exposed to the southern aspects. Landslides are the dominate disturbance factors on steep wind protected slopes. Gentle slopes are present along broad ridgelines, valley bottoms, and along the lava plateau in the south central portion of the island. Gentle slopes support muskeg and scrub vegetation. Minor areas of karst are present in the southeast portion of the island. Thin layers of volcanic ash occur in some of the soils around Port Santa Cruz. The south and southwest portion of the Suemez Island include basalt lava beds that are included in a Geologic Special Interest Area.

#### **Existing Condition of Soils on the Project Area**

The soils on the Scratchings project area are mostly in a pristine condition. Past management activities include about 1,459 acres of timber harvest and 37 miles of road construction (includes past temporary and NFS road construction). The majority of soil disturbance on Suemez Island is the result of windthrow, landslide activity, and other natural soil disturbances. Soil disturbances (natural and management related) on Suemez Island are summarized in Table 3SL-1.



**Table 3SL-1. Existing Soil Disturbances in the Project Area**

<b>Soil Disturbance Source</b>	<b>Acres Affected</b>	<b>Project Area (percentage)</b>
<b>Management Related Soil Disturbances</b>		
Past log yarding activities	44	0.1%
Existing acres of temporary road (9 miles)	44	0.1%
Existing acres of NFS road (28 miles)	136	0.4%
Existing rock pits (16 rock pits)	16	Less than 0.1%
Landslides from past harvest (24 slides)	13	Less than 0.1%
Landslides from road construction (17 slides)	13	Less than 0.1%
<b>Total Soil Disturbances from Management</b>	<b>266</b>	<b>0.7%</b>
<b>Naturally Occurring Disturbances</b>		
Naturally occurring landslides (379 slides)	698	1.9%
Natural mineral soil disturbances (windthrow, stream bank erosion, etc.)	243	0.6%
<b>Total Natural Soil Disturbances</b>	<b>941</b>	<b>2.5%</b>
<b>Total Existing Soil Disturbances</b>	<b>1,207</b>	<b>3.2%</b>

Management activities have caused past soil disturbances. These past disturbances are considered to be minor and currently have minimal erosion concerns, with the exception of disturbances in the Dolores Watershed. On Suemez Island, all management related soil disturbances are within parameters found in Region 10 Soil Quality Standards. The following sections describe the natural and management induced soil disturbances in detail.

#### **Existing Condition - Landslides & Other Natural Soil Disturbances**

Landslides (mass wasting) are the dominant erosion process in steep forested terrain with high soil water levels in Southeast Alaska (Swanston 1969). Topographic, geologic, and soil conditions in combination with high amounts of rainfall are the major factors contributing to landslides in Southeast Alaska.

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The soil mass movement index is a tool used to assess slope stability at the project scale. Mass Movement Index (MMI) hazard classes are used to group soil map units that have similar properties relative to the stability of natural slopes. Four categories of MMI soils hazard classes exist; MMI 1 (most stable) through MMI 4 (least stable). Soils with a very high Mass Movement Index (MMI 4) are the least stable and have the greatest probability of slope failure.

A landslide inventory was completed for the Scratchings Project area. The inventory used 1971, 1985, 1991, and 2005 aerial photography, and field observations to identify landslides. The landslide initiation points were overlaid with the mapped Mass Movement Index class to display the relationship between mapped mass movement index and actual landslide occurrence. The data is summarized in the first part of Table 3SL-2. The second part of Table 3-SL2 provides landslide data for the most recent 20 year time period. The most recent 20 year time period includes most of the management activities on the island.

**Table 3SL-2. Landslides and Acreage**

<b>Mass Movement Index Class</b>	<b>Acres of MMI Class</b>	<b>Number of Landslides</b>	<b>Approx. Acres of landslides</b>
*Initiated in MMI 1	16,993	49	57 acres
*Initiated in MMI 2	5,353	52	61 acres
*Initiated in MMI 3	13,677	246	461 acres
*Initiated in MMI 4	1,104	73	145 acres
<b>Total</b>	<b>37,127</b>	<b>420</b>	<b>724 acres</b>
<b>Landslides in the most recent 20 year time period, 1985 to 2005.</b>			
<b>Unharvested Areas</b>	<b>Total Acres</b>		
Landslides occurring in POG**, 1985-2005	21,386	114	94 acres
Landslides in non-POG, 1985-2005	14,102	14	13 acres
<b>Management Related Landslides</b>			
Harvest Related Landslides, 1985-2005	1,459 acres of harvest	24	13 acres
Road Related Landslide, 1985- 2005	37 miles of road	17	13 acres
<b>Twenty Year Totals</b>		<b>169</b>	<b>133 acres</b>

\*Analysis based upon landslide initiation point and soil mapping in GIS. Many of the naturally occurring landslides shown to originate in MMI 1 through MMI 3 soils are likely to occur in soil mapping inclusions of MMI 4 soils. This portion of Table 3SL-2 does not include road related landslides. Numerous landslides that originate in MMI 4 and MMI 3 soils have disturbed MMI 1 and MMI 2 soils.

Source: USDA Forest Service, Craig Ranger District, GIS Database

\*\*POG= Productive Old Growth

Table 3SL-2 indicates that a total of 420 landslides have disturbed nearly 724 acres across Suemez Island. Naturally occurring landslide events account for over 96 percent of these landslide acres. The majority of these natural landslides have initiated in MMI 3 and MMI 4 soils. Between 1985 and 2005, a total of 114 landslides occurred in productive old growth (POG) disturbing about 94 acres of soils, and averaging 0.8 acres in size. In this same 20-year time period, 24 landslides occurred within previously harvested areas disturbing about 13 acres of soils, and averaging 0.5 acres in size. The occurrences of landslides in harvested areas may be attributed to a higher concentration of soil water resulting from soil disturbance caused by log yarding and felling, and less rainfall interception.

Between 1985 and 2005, a total of 17 road related landslides occurred and impacted about 13 acres, averaging a size of 0.8 acres. Road related landslides are generally the result of ditches concentrating water and delivering it to a naturally unstable area of the slope or by excessive road fill weight on a naturally unstable slope (Landwehr, 1999). Several of the road related landslides are associated with Roads 1080750, 1080760, and 1080820. Segments of these roads are located on steep slopes.

A total of 169 landslides have occurred since the majority of the timber harvest began in 1985 of which 41 are related to harvest and road activities. Between 1985 and 2005, a total of 114 landslides occurred in POG and 14 landslides occurred in non-POG. In this analysis, only landslides occurring in POG were compared with harvested areas. An average of eight landslides per year occurred between 1985 and 2005 in both POG and managed areas. Management related landslides essentially account for about 1.3 acres of disturbance per year during this time frame. Landslide activity from harvest activities (24 landslides) accounts for less than two percent of the total landslide disturbance on the island over the last 20 years. When the landslide inventory data is compared on a per acre basis the data indicates that landslides in harvested areas are three times more likely to occur than landslides in unharvested areas.

The results reported here for the Scratchings project area are similar to the results from other landslide inventories conducted on the Tongass National Forest. Swanston and Marion (1991) found a 3.5 fold increase in landslides in harvested areas versus unharvested areas. They also noted that landslides in harvested areas tend to be smaller than landslides in unharvested areas. Bishop and Stevens (1964) found a 4.5 fold increase in landslide rates in harvested areas versus unharvested areas. Landwehr (1998) found a 10 fold increase in the numbers of landslides in harvested areas (over a 20 year time period)



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but noted that slides in harvested areas were typically much smaller than slides in unharvested areas. In another inventory Landwehr (1994) found a three to five fold increase in landslides in harvested areas versus unharvested areas (depending on methods).

Natural disturbances on Suemez Island also include areas such as soil, erosion from overland flow, stream bank erosion, windthrow, and colluvial activity. These natural soil disturbances are estimated to occupy approximately 243 acres on Suemez Island.

Suemez Island is highly exposed to high wind events that lead to windthrow. Numerous areas have experienced windthrow and are at risk for future events. Windthrow may also lead to landslide activity on shallow soils present on steep forested slopes (Swanston 1967). However, windthrow may play an important role in the soil disturbance and nutrient cycling regime of some soils on the Scratchings project area. Nutrients tend to accumulate and become immobilized in organic and upper layers of the soil which can lead to nutrient deficiency in areas where minimal windthrow disturbance or other soil disturbance mechanisms are present (Bormann et al. 1995). Windthrow can provide mixing and aeration of the organic and mineral soil horizons, freeing nutrients to be used by plants, thus increasing soil productivity. Conversely, Stephens et al. 1968 found that stands regenerated from windthrow had a site index that was about 20 feet less than in stands originating following clearcutting or fires.

#### **Existing Condition -Management Related Disturbances**

The majority of timber harvest on the project area has occurred since 1985 and accounts for about 1,459 acres. The sums of the harvest entries do not add up due to rounding. About 105 acres of harvest occurred in 1955 located primarily in the Dolores Watershed, 93 of these acres are on State land. Between the years 1961 and 1985, harvest entries account for only 36 acres in mostly low elevation areas at Port Refugio. Harvest entries in 1985 and 1986 accounted for 330 acres. Harvest entries in 1994, 1995, and 1996 accounted for approximately 989 acres. Soil disturbances associated with past harvest activities have typically been the result of road construction and log yarding. Yarding methods since 1985 have used suspension techniques that provided partial suspension of logs and full suspension in some cases. These yarding techniques greatly minimized potential disturbances when compared to using non-suspension techniques. Soil disturbances from past yarding activities total less than 44 acres and are considered minimal at the project scale. The acres of disturbed soil associated with past harvest are based on soil disturbance monitoring data summarized by Landwehr and Nowacki (1999).

Soil disturbances associated with road construction cover about 180 acres from 37 miles in the project area (based on a 40 foot wide disturbed soil corridor). Soil disturbances from road construction involve removing the nutrient rich organic layer to shape cutslopes and burying some areas of productive soil under shot rock. Overlay road construction has been commonly used on nearly level or gently sloping poorly drained soils in wetland areas. Overlay road construction does not impact as large an area of soil as cut and fill road construction. To build the roads, 16 one-acre rock pits have been developed. In rock pit sites, productive soil areas are replaced by exposed bedrock. Soils are removed to expose the bedrock and are stacked adjacent to the pit burying other productive soils. Existing soil disturbances are within the Region 10 Soil Quality Standards.

Within the Dolores Watershed slopes are steep and dense till underlies the slopes at lower elevations. Timber harvest activities within the Dolores Watershed have resulted in about 5 miles of road and 327 acres of 10-year old clearcuts on Forest Service System land. Thirty-one landslides (natural and management related) occupying nearly 36 acres have occurred in this watershed. A total of 11 landslides occurred naturally before 1985, disturbing about 14 acres. Between the years 1985 and 2005, six landslides occurred in unharvested areas (POG) disturbing 5 acres. Road related activities initiated 6 landslides, totaling approximately 10 acres. Eight landslides have initiated in harvest areas and account for 7 acres of soil disturbance. In the Dolores Watershed, landslides in harvested and unharvested areas between 1985 and 2005 have both averaged less than one acre in size. Prussian (2005) documented the existing condition of Dolores Creek (see also the Watersheds and Fisheries section, this chapter).

## **Existing Condition - Harvest on Slopes Greater than 72 Percent**

Past harvest activities have largely avoided slopes greater than 72 percent gradient. The digital elevation model for the project area when overlain with the managed stands layer indicates less than one acre of slopes greater than 72 percent gradient have been harvested.

## **Environmental Consequences**

### **Soil Productivity**

Region 10 Soil Quality Standards state that a minimum of 85 percent of an area should be left in a condition of acceptable productivity potential for trees and other managed vegetation following land management activities. Detrimental soil conditions are defined in Forest Service Manual 2554. Detrimental soil areas are areas of soil that have been altered to the point where soil productivity has been

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affected. Detrimental soil conditions are typically associated with road construction, log felling, and log yarding. Soil disturbances associated with system (NFS) road construction are not counted toward detrimental soil condition because system roads are removed from the productive land base. Temporary roads are considered part of the land base and are included in the calculation of detrimental soil conditions.

Detrimental soil conditions are calculated for two activity areas, individual harvest units and the overall project area. Analysis of detrimental soil condition from temporary road construction is based upon a 40-foot wide disturbed soil corridor which equates to about five acres of disturbance per mile. Detrimental soil conditions incurred by proposed harvest activities such as tree felling and yarding include soil displacements; a loss of ground cover, compaction and soil puddling. This analysis of detrimental soil conditions in harvest units is based on soil quality monitoring data collected on the Tongass as reported by Landwehr and Nowacki (1999). The analysis assumes three percent detrimental soil condition for areas where partial suspension or shovel yarding is proposed and two percent detrimental soil condition where full suspension is proposed.

#### **Effects of Alternatives**

Table 3SL-3 Displays the estimated acres of detrimental soil conditions resulting from the implementation of the alternatives.



**Table 3SL-3. Estimated acres of new detrimental soil conditions resulting from implementation of the alternatives.**

Item causing soil disturbance	Alternatives <sup>1</sup>				
	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
New Temporary Road Construction (acres) <sup>2</sup>	0	34	24	14	19
Rock Pit Development for new road construction (acres) <sup>3</sup>	0	10	6	3	5
Yarding Disturbances in Harvest Units <sup>4</sup>	0	41	28	21	22
Management Related Landslides (acres per year) <sup>5</sup>	0	1.4	0.9	0.7	0.7
<b>Total Acres of New Detrimental Soil Conditions<sup>6</sup></b>	0	86	59	39	47

<sup>1</sup>The numbers above are rounded.

<sup>2</sup>Estimate of soil disturbance from new road construction based upon 40-foot road base.

<sup>3</sup>A one-acre rock pit has been estimated for every two miles of road construction.

<sup>4</sup>Yarding disturbances based on estimates provided by Landwehr and Nowacki (1999).

<sup>5</sup>Landslide acre estimate based on landslide inventory.

<sup>6</sup>Detrimental soil conditions based on proposed timber harvest acres and do not include deferral acres.

Table 3SL-3 data indicate that Alternative 2 would result in the greatest impact to soil productivity while Alternatives 1 and 4 would result in the least impact to soil productivity. Of the action alternatives, implementation of Alternative 4 results in the least amount of detrimental soil conditions. A detailed analysis of estimated soil disturbance for each proposed harvest unit has been conducted and is included in the *Scratchings EIS Soil and Wetland Resources Report, 2005* and the *Scratchings EIS Soil Resource Report Addendum, 2007* in the Scratchings Project Record. The data indicates that Region 10 Soil Quality Standards will be met in all harvest units and across the project area, thus soil productivity will be maintained on the project area under all alternatives.

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#### **Harvest on Slopes Over 72 Percent**

All proposed harvest units with slopes exceeding approximately 50 percent gradient were field reviewed by a soil scientist following Forest Plan standards and guidelines for slopes over 72 percent gradient. Boundaries were modified on many steep slope areas due to concerns about slope stability and impacts to soil productivity following harvest. Approximately 755 acres of landslide prone slopes were removed from harvest consideration to protect soil resources and prevent potential degradation of downslope resources. In addition, harvest prescriptions and suspension requirements were determined for other steep slope areas.

Complete details on steep slopes in harvest units are included in the soil unit resource reports and in the individual unit cards (in the Scratchings project record). Approximately 44 acres of slopes greater than 72 percent gradient remain in the unit pool because they rate well below MMI 4 landslide potential. Most areas are less than 3 acres in size and consist of short steep slopes associated with rock outcrops. They are included in the proposed harvest units because they appear stable and will facilitate yarding of surrounding lesser slopes. Appropriate mitigation measures are prescribed (unit cards in the project record). Table 3SL-4 displays the proposed harvest units and acres of slopes greater than 72 percent gradient that remain in the unit pool, and the alternative that includes the harvest unit.

**Table 3SL-4. Proposed harvest units with areas of slopes over 72% gradient that meet Forest Plan guidelines for timber harvest, by harvest unit and action alternative.**

<b>Timber Unit</b>	<b>Total Harvest Acres</b>	<b>Slopes greater than 72% (acres)</b>	<b>Included in Alternative (s)</b>
633-017	46	3	2, 3, 4, 5
633-018	49	7	2, 3, 4, 5
633-020	50	2	2, 3, 4, 5
634-002	40	0.5	2, 3, 5
634-003	82	4	2, 3, 5
634-005	37	7	2, 3, 4, 5
634-009	18	3	2, 3, 5
634-027	39	1	2
634-030	55	1	2
634-032	71	0.5	2
634-037	33	3	2
634-068	27	3	2, 3
634-069	24	2	2, 3
635-014	21	1	2, 3, 4, 5
635-015	35	2	2, 3, 4, 5
635-062	63	4	2, 3, 4, 5
<b>Totals</b>	<b>690</b>	<b>44</b>	

The acres above are rounded and do not include deferral areas.

The areas in Table 3SL-4 meet the criteria for timber harvest on slopes greater than 72 percent gradient as defined by the Forest Plan. The majority of these units are proposed for helicopter yarding. Partial cutting in these helicopter units would help ensure an adequate amount of live root mass remains intact to preserve slope stability. Less soil disturbance in a harvest unit results in less disruption of the root mat and subsequently more root strength than if the soil is disturbed (Swanston 1974). Full suspension helicopter yarding of felled trees would provide the necessary surface protection for soils during the yarding process on steep slopes.

### **Direct/Indirect Effects**

The analysis area for direct and indirect effects for the soils resource is the harvest unit and associated temporary roads.

#### **Alternative 1**

Under Alternative 1 no timber harvest or road building would take place and no soil disturbances would be caused by new management activities. No rehabilitation efforts involving road reconstruction, storage, and decommission would be completed on existing roads under this project. Roads on the project area would continue to receive



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incidental use from hunters and other visitors. Landslides would continue to occur in unharvested areas and harvested areas. Vegetation in harvested areas would continue to grow and add stability to soils on those sites. Detrimental soil conditions will remain within Region 10 Soil Quality Standards.

#### **Alternative 2**

Alternative 2 proposes 1,565 acres of timber harvest. Approximately 627 acres would be helicopter yarded, 726 acres cable yarded and 212 acres shovel yarded under minimum partial suspension requirements. Nineteen miles of new temporary and NFS roads would be built. Approximately 101 acres of soil would be disturbed by temporary and NFS road construction and rock pit development. About 41 acres of soil disturbance would occur in harvest units and about 28 acres of management induced landslides are expected to occur over the next 20 years. Total area of soil with reduced productivity would be about 86 acres. (See Table 3SL-3.) All harvest units will meet Region 10 Soil Quality Standards.

Approximately 44 acres of slopes greater than 72 percent gradient would be harvested in Alternative 2. Alternative two includes the highest amount of timber harvest proposed on slopes greater than 72 percent of any alternative. All harvest proposed on slopes greater than 72 percent gradient have been reviewed by a soil scientist and meet the requirements set forth in the Forest Plan.

#### **Alternative 3**

Alternative 3 proposes 1,024 acres of timber harvest. Approximately 261 acres would be helicopter yarded, 551 acres cable yarded and 212 acres shovel yarded under minimum partial suspension requirements. In Alternative 3, about 13 miles of new temporary and NFS roads would be built. Approximately 69 acres of soil would be disturbed by temporary and NFS road construction and rock pit development. About 28 acres of soil disturbance would occur in harvest units and about 18 acres of management induced landslides are expected to occur over the next 20 years. Total area of soil with reduced productivity would be about 59 acres. (See Table 3SL-3.) All harvest units will meet Region 10 Soil Quality Standards.

Approximately 39 acres of slopes greater than 72 percent gradient would be harvested in Alternative 3. Alternative three includes less timber harvest proposed on slopes greater than 72 percent than Alternative 2. All harvest proposed on slopes greater than 72 percent gradient have been reviewed by a soil scientist and meet the requirements set forth in the Forest Plan.

### **Alternative 4**

Alternative 4 proposes 760 acres of timber harvest. Approximately 232 acres would be helicopter yarded, 361 acres cable yarded and 167 acres shovel yarded under minimum partial suspension requirements. Seven miles of new temporary and NFS roads would be built. Approximately 34 acres of soil would be disturbed by temporary and NFS road construction and rock pit development. About 21 acres of soil disturbance would occur in harvest units and about 14 acres of management induced landslides are expected to occur over the next 20 years. Total area of soil with reduced productivity would be about 39 acres. (See Table 3SL-3.) All harvest units would meet Region 10 Soil Quality Standards.

Approximately 27 acres of slopes greater than 72 percent gradient would be harvested in Alternative 4. Alternative four proposes the least amount of timber harvest proposed on slopes greater than 72 percent of an action alternative. All harvest proposed on slopes greater than 72 percent gradient have been reviewed by a soil scientist and meet the requirements set forth in the Forest Plan.

### **Alternative 5**

Alternative 5 proposes 784 acres of timber harvest. Approximately 129 acres would be helicopter yarded, 443 acres cable yarded and 212 acres shovel yarded under minimum partial suspension requirements. Approximately 10 miles of new temporary and NFS roads would be built. Approximately 48 acres of soil would be disturbed by temporary and NFS road construction and rock pit development. About 22 acres of soil disturbance would occur in harvest units and about 14 acres of management induced landslides are expected to occur over the next 20 years. Total area of soil with reduced productivity would be about 47 acres. (See Table 3SL-3.) All harvest units will meet Region 10 Soil Quality Standards.

Approximately 28 acres of slopes greater than 72 percent gradient would be helicopter yarded in Alternative 5. Alternative five proposes slightly more timber harvest proposed on slopes greater than 72 percent than Alternative 4. All harvest proposed on slopes greater than 72 percent gradient have been reviewed by a soil scientist and meet the requirements set forth in the Forest Plan.

### **Cumulative Effects Associated with the Alternatives**

The analysis area for cumulative effects for the soils resource is the project area.

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Foreseeable future management actions include a road storage contract (see Table 3-1) and a proposed recreation trail, both which are not expected to result in additional areas of soil disturbance.

#### **Alternative 1**

Detrimental soil conditions incurred from past management activities cover about 130 acres or less than 1 percent of the project area. Existing NFS road has disturbed about 136 acres or less than 1 percent of the project area. Soil disturbances from naturally occurring landslides and windthrow and streambank erosion cover about 941 acres or about 2.5 percent of the project area. Alternative 1 proposes no new timber harvest or roads. The project area meets Region 10 Soil Quality Standards.

Natural soil disturbances including landslides would continue to occur. Past timber harvest and road building is associated with 41 landslides totaling about 26 acres in 20 years (mostly in the last 10 years). Most of this landslide activity is the result of road related activities and timber harvest on steep slopes before current Forest Plan standards and guidelines were implemented. This rate of landslide activity can be attributed to road building and timber harvest under the Santa Cruz Timber Sale.

The landslide inventory data from the island indicate that landslide frequency is higher in harvested areas than in unharvested areas. This increase in landslide frequency is expected to result in about 10 acres of additional landslides in harvested areas over the next 20 years. Vegetation in previously harvested areas would continue to grow and add root mass and stability to the soil, thus landslide frequency would likely decline over time in the harvested areas (Landwehr 1994). Based on the island-wide landslide inventory, landslides would continue to average 8 slides per year across the island. Approximately 0.5 acres of landslides per year would be attributed to the past management activities.

Across the project area, erosion sources are typically small (less than 100 square feet) and include landslide headwalls, road banks, road surfaces, windthrow, and stream banks. See the Watersheds and Fisheries section for a discussion of the effects of sedimentation.

#### **Alternative 2**

In addition to the impacts described for Alternative 1, Alternative 2 would add the effects described in the direct and indirect effects. The amount of timber harvest on the project area would increase to 3,024 acres and miles of temporary and NFS road on the project area would increase to 56 miles. The number of rock pits would likely increase



from 16 to 25. Detrimental soil conditions from all temporary roads, rock pits and within harvest units would be about 216 acres. This level of disturbance is well within Regional Soil Quality Standards.

Natural soil disturbances including landslides would continue to occur. Landslides within previously harvested areas would occur at a higher frequency than unharvested areas. Vegetation in previously harvested areas would continue to grow and add root mass and stability to the soil, thus landslide frequency would likely decline over time in the harvested areas (Landwehr 1994). Alternative 2 proposes about 44 acres of timber harvest on slopes over 72 percent gradient. These areas have been reviewed for slope stability concerns by a soil scientist. Based on the island-wide landslide inventory, landslides would continue to average 8 slides per year across the island. Over the next 20 years, about 38 acres, less than two acres of landslides per year, would be attributed to existing and proposed management activities.

Across the island, erosion sources are typically small (less than 100 square feet) and include landslide headwalls, road banks, road surfaces, windthrow, and stream banks. See the Watersheds and Fisheries section for a discussion of the effects of soil erosion.

### **Alternative 3**

Alternative 3 would have cumulative effects similar to Alternative 2 but not as extensive. The amount of timber harvest on the project area would increase to 2,483 acres and the cumulative miles of temporary and NFS road would increase to 50 miles. The number of rock pits would likely increase from 16 to 22. Detrimental soil conditions from all temporary roads, rock pits and within harvest units would be about 189 acres. Soil conditions would be within Region 10 Soil Quality Standards. Alternative 3 proposes about 39 acres of timber harvest on slopes over 72 percent gradient. These areas have been reviewed for slope stability concerns by a soil scientist. Over the next 20 years, management related landslides would disturb about 28 acres, about 1.4 acres per year.

### **Alternative 4**

Alternative 4 would have cumulative effects similar to Alternative 2 but not as extensive. The amount of timber harvest on the project area would increase to 2,219 acres and the cumulative miles of temporary and NFS road would increase to 44 miles. The number of rock pits would likely increase from 16 to 19. Detrimental soil conditions from all temporary roads, rock pits and within harvest units would be about 169 acres. Soil conditions would be within Region 10 Soil Quality Standards. Alternative 4 proposes about 27 acres of timber harvest on slopes over 72 percent gradient. These areas have been reviewed for

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slope stability concerns by a soil scientist. Over the next 20 years, management related landslides would disturb about 24 acres, about 1.2 acres per year.

#### **Alternative 5**

Alternative 5 would have cumulative effects similar to Alternative 2 but not as extensive. The amount of timber harvest on the project area would increase to 2,243 acres and the cumulative miles of temporary and NFS road would increase to 47 miles. The number of rock pits would likely increase from 16 to 21. Detrimental soil conditions from all temporary roads, rock pits and within harvest units would be about 177 acres. Soil conditions would be within Region 10 Soil Quality Standards. Alternative 5 proposes about 28 acres of timber harvest on slopes over 72 percent gradient. These areas have been reviewed for slope stability concerns by a soil scientist. Over the next 20 years, management related landslides would disturb about 24 acres, about 1.2 acres per year.

## Wetlands

This section provides a summary of the wetland resources in the project area. Forest-wide standards and guidelines for this resource are on page 4-111 of the 1997 Tongass Forest Land and Resource Management Plan, as amended (Forest Plan). Description and classification of wetlands in the project area follows the USDA Wetland Classification (DeMeo & Loggy 1989). Detailed discussion of the existing condition of wetlands on Suemez Island can be found in the *Scratchings EIS Soil and Wetland Resources Report, 2005* in the Scratchings project record.

Wetlands are defined as “those areas that are inundated or saturated by surface water or groundwater with a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions.” (40 CFR 230.41 (a) (1))

The Interdisciplinary Team identified two key indicators to measure the effects of the alternatives on wetland resources:

- Acres of wetland converted to upland due to road construction
- Acres of harvest on forested wetlands

Executive Order 11990 and subsequent regulations require federal agencies to avoid new construction on wetland whenever there is a practicable, environmentally-preferred alternative. Where a wetland cannot be avoided, the impacts are to be minimized. Best Management Practice (BMP) 12.5 provides guidance for wetland identification, evaluation, and protection.

Wetland resources in the project area have been reviewed using soil survey data in GIS, aerial photos, and field reconnaissance. Soil survey data has been used for general wetland analysis of the project area. BMPs and site-specific recommendations for wetland protection in harvest units and road segments are based on field information.

The analysis for this section uses both temporary road and National Forest System (NFS) road information.

### Affected Environment

Wetlands occupy 58 percent of the land area (approximately 21,718 wetland acres) in the project area. Seventy-eight percent of wetlands in the project area are forested wetland and complexes with associated wetland types (16,991 acres of forested wetland). Non-forested



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wetlands account for nearly 22 percent (4,727 acres) of all wetland types in the project area. These wetlands include estuary, emergent short sedge/shrub-scrub, tall sedge fens, and alpine muskeg. The Tongass National Forest Wetland Classification (DeMeo & Loggy 1989) was used to identify wetland types in the project area.

#### **Forested Wetland**

Forested wetland and complexes with associated wetland types are abundant covering 46 percent (16,991 acres) of the project area. Forested wetlands include a number of forested plant communities with hemlock, cedar, or mixed conifer overstories, and ground cover consisting largely of skunk cabbage and deer cabbage. Forested wetlands occur on poorly or very poorly drained hydric mineral and organic soils. Forested wetlands are most common on gentle hill slopes or benches, but are found on moderately steep terrain in areas with underlying volcanic geology. Forested wetlands support the transfer of water to downslope resources. These wetlands function as recharge areas for groundwater and streams and for deposition of sediment and nutrients.

#### **Emergent Short Sedge Wetland**

Emergent sedge wetlands include areas of low swampy land called fens and rich bogs on moderately deep and very poorly drained organic soils. These wetlands cover approximately about 9 percent (3,271 acres) of the project area. Vegetation consists primarily of short sedges and mosses with scattered shrub communities and shore pine. Emergent short sedge wetland is often found on lower footslopes and on broad ridgetops. These wetlands contribute water to downslope resources and provide carbon and nutrient cycling benefits for watershed function.

#### **Emergent Tall Sedge Fens**

Emergent tall sedge fens are characterized by a diverse community of sedges, dominated by tall sedges such as Sitka sedge, with a variety of forbs and occasional stunted trees, usually spruce or hemlock. Soils are typically deep organic muck, often with some thin layers of alluvial mineral soil material. They occur in landscape positions where they receive some run-off from adjacent slopes resulting in somewhat richer nutrient status than bogs. These wetlands function as areas for recharge of groundwater and streams, deposition and storage of sediment and nutrients, and for waterfowl and terrestrial wildlife habitat, including black bear, mink, river otter, and beaver. Many of the sedge fens contain beaver ponds that often provide high quality waterfowl habitat and salmon rearing habitat. Tall sedge fens are rare across the island, accounting for less than 0.1 percent (25 acres).

## Alpine Muskeg

Alpine muskegs are similar to emergent sedge and muskeg complexes; however, they occur at higher elevations in the landscape, such as ridge tops and mountain summits. Alpine muskeg is located primarily in the southern half of island where management activities have not occurred and are not planned in the foreseeable future. These wetlands cover about 4 percent (1,423 acres) of the project area. Alpine muskegs are dominated by sphagnum moss with a wide variety of other plants adapted to very wet, acidic, organic soils. Vegetation is a combination of muskeg and sedge meadows on peat deposits, and low growing blueberry and heath on higher rises. Similar to muskeg, shore pine and hemlock trees less than 15 feet high are common. Alpine muskegs are important for snow storage and can be a source for snowmelt water throughout the spring and early summer months. These wetlands also provide summer habitat for terrestrial wildlife species.

## Estuaries

Estuaries are unique brackish environments where fresh water mixes with saltwater. They are the most valuable wetland on the island, supporting complex and productive ecosystems for critical fish and wildlife habitat. These areas are very rare on Suemez Island covering less than 0.1 percent (8 acres) in Port Refugio. These areas are valuable for their habitat for both aquatic and terrestrial species. A high diversity of wildlife is typically found in estuaries. The Forest Plan standards and guidelines give estuaries a 1,000-foot buffer.

## Existing Condition of Wetlands on the Project Area

Most wetlands on the project area remain in a pristine condition. Upland timber stands and wetlands are very interspersed over the southern half of the project area. In the northern half of the project area, upland soils are concentrated on steep slopes. Roads across ridgetop wetlands are necessary to access timber on steep slopes. The general effects of roads and timber harvest on wetlands is described below, followed by Table 3WT-1 which displays the acres of timber harvest and miles of roads on wetlands.

## Roads on wetlands

Roads across sloping wetlands may effect hydrologic connectivity across the wetland due to road ditches or road fills. A total of 137 acres of wetland have been replaced by roads on the project area. Road building on wetlands has occurred primarily on the forested wetland type (about 121 acres), less than 1 percent of forested wetlands in the project area. Forested wetlands are abundant, covering nearly 46 percent of the project area. Implementation of adequate road drainage minimizes the impacts to hydrologic connectivity of wetlands. Past

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road construction on non-forested wetlands has been minimal. Approximately 16 acres of non-forested wetlands (emergent short sedge) have been converted to road, less than one percent of the total acreage for non-forested wetlands. Road segments 1080000 and 1080700 located along the southeastern corner of the Dolores Watershed contain the largest amount of disturbance to emergent sedge wetlands, a total of 2 miles. These emergent sedge wetlands are located on a broad ridgeline high on the landscape and donate water to downslope areas. The roads were constructed to access timber on steeper slopes. Additional concentrated wetland disturbances are located on the 1086000 and 1086200 roads in the Refugio and West watersheds. These roads total less than 1 mile on wetlands. Due to gentle slopes, roads constructed on these short sedge wetlands consist primarily of shot rock overlay which allows water to seep through. Based on Glaser (1999), effects to wetland hydrology and vegetation adjacent to these roads is expected to be minimal and within the estimates described for Table 3WT-1. Table 3WT-1 displays the acres of wetlands impacted by roads.

#### **Harvest on Wetlands**

Timber harvest on wetlands has temporary effects on wetland hydrology. Rainfall interception studies (Patric 1966; Beuadry and Sagar 1995) indicate that the amount of rainfall hitting the soil surface will increase following clearcutting. Soils within harvested sites tend to gain higher moisture levels resulting in slower growth in the seedling and sapling stage. Soil moisture conditions remain elevated until evapotranspiration surfaces in the canopy of the young stand become equivalent to pre-harvest conditions. Depending on the soil moisture status of the wetland, this effect can range from negligible or last more than 20 years, but in all cases the effect is expected to be temporary. In partially harvested stands, retention of a portion of the canopy cover would further minimize the effect of timber harvest on soil moisture. Many of the forested wetlands on the Scratchings project area support commercial stands of timber. Some of these stands have been harvested in the past and some are proposed for harvest in this EIS. Table 3WT-1 displays the acres of wetlands harvested by wetland habitat type.



**Table 3WT-1. Existing acres of road and timber harvest on wetland by wetland habitat type.**

<b>Wetland Habitat Type</b>	<b>Project area acres</b>	<b>Percent of project area</b>	<b>Harvested acres</b>	<b>Miles of road</b>	<b>Acres of road</b>	<b>% of wetland type roaded</b>
Estuary	8	less than 0.1%	0	0	0	0
Alpine Muskeg	1,423	4%	0	0	0	0
Tall Sedge Fen	25	less than 0.1%	0	0	0	0
Emergent Short Sedge	3,271	9%	17*	3	15	less than 1%
Forested Wetland	16,991	46%	808	25	121	less than 1%
<b>Wetland Totals</b>	<b>21,718</b>	<b>58%</b>	<b>825</b>	<b>28</b>	<b>136</b>	<b>less than 1%</b>
Uplands	15,409	42%	634	9	42	less than 1%
<b>Project Area Totals</b>	<b>37,127</b>	<b>100%</b>	<b>1,459</b>	<b>37</b>	<b>178</b>	<b>less than 1%</b>

Calculation of roaded acres based on 40-foot wide disturbed soil road corridor.

Sums may not match due to rounding.

\* These wetlands occurred as small inclusions within past harvest units.

## Wetland avoidance

Approximately 56 percent of the existing timber harvest is on wetlands, whereas about 58 percent of the project area is wetland (forested wetlands account for about 46 percent of the project area). Approximately 77 percent of the existing roads are on wetlands, whereas only about 58 percent of the project area is considered wetland. Interpretation of these numbers might suggest that road construction has not avoided wetlands to the extent practicable on the project area. However, on the project area the base geology and topography is such that many of the upland forested sites occur on steep slopes. Avoiding steep slopes by building road across wetlands is environmentally preferred when compared to road construction across steep slopes. The forested wetlands on the Scratchings project area often include stands of commercial timber and are managed for their timber resources. Management of the forested wetland timber stands is part of the project goals and objectives. The most economical way to access the forested wetlands timber stands often involves building road. Within the context of overall project objectives, including economics and minimizing harm to the environment, past road construction has avoided wetlands to the extent practicable in the project area.

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The four action alternatives avoid wetlands to the extent practicable. Site specific wetland avoidance is documented on the road cards for NFS road segments and the unit cards for temporary road segments. At the project scale 63 percent of all proposed roads, both NFS and temporary, are on wetland and 37 percent on uplands in Alternative 2. In Alternative three, 65 percent of the proposed NFS and temporary roads are on wetlands. Under Alternative four, 83 percent of the proposed NFS and temporary roads are on wetlands. In Alternative five, 60 percent of the proposed NFS and temporary roads are on wetlands. At first glance the data suggests that Alternative 5 does a better job of avoiding wetland conversion to roads. However, this information needs to be taken in context of project objectives and alternative design. Alternatives 2 (63 percent), 3 (65 percent), and 5 (60 percent) have proportions of proposed road miles on wetlands similar to the proportion of wetlands to uplands on the project area (58 percent). Eighty-three percent of the 7 miles of proposed NFS and temporary road in Alternative 4 are located on wetlands. Alternative 4 avoids roads on steep slopes (uplands) in the Dolores Watershed and thus has a higher percentage of roads on wetlands, while avoiding the environmental effects associated with roads on steep slopes.

With all action alternatives, a high percentage of the proposed harvest is on sites that classify as forested wetlands. Access within and to these stands often requires crossing wetlands. With all of the action alternatives, the same factors discussed in the previous paragraph come into play. Road access to timber on steep upland slopes often requires road construction across gently sloping ridgetop areas that classify as wetlands. All action alternatives and individual road locations avoid wetlands to the extent feasible. The road cards (NFS roads) and the unit cards document wetland avoidance at the site scale (road cards and unit cards are in the Scratchings project record).

#### **Environmental Consequences**

All action alternatives propose some level of timber harvest on forested wetlands. The effect of timber harvest (increased soil moisture levels) on forested wetlands are expected to be temporary. All harvested sites are expected to regenerate naturally.

Due to the preponderance of wetlands and the interspersed nature of wetlands with uplands on the project area, complete avoidance of wetlands from proposed road construction activities is not feasible. Most proposed roads would be constructed on forested wetlands and uplands. All estuaries and emergent tall sedge fens are avoided by proposed roads in the action alternatives. Due to topographic constraints short segments of the proposed 1080800 road (less than 2 acres of disturbance) would be constructed in an emergent short sedge

wetland under all action alternatives. This wetland occupies a topographic rise and contributes water to downslope areas. The road is not expected to alter this function. All proposed roads will be constructed according to state approved BMPs as required by 33 CFR 323. State approved BMPs consist of those BMPs documented in Forest Service Handbook 2509.22 and documented on the road cards in the Scratchings project record. All roads through wetlands will also follow the 15 baseline provisions provided in 33CFR 323 also documented on the road cards. Table 3WT-2 provides a summary of proposed timber harvest and road construction on wetlands by wetland habitat type and alternative.

**Table 3WT-2. Estimated acres of road construction and timber harvest by wetland habitat type and alternative.**

Key Indicator	Wetland Type	Alt 2	Alt 3	Alt 4	Alt 5
Acres of roads on wetlands	Forested wetland	56	38	27	27
	Emergent short sedge	2	2	1	1
	Total Road acres on wetlands	58	40	28	28
Harvest on forested wetland (acres)		849	537	495	440

Calculation of roaded acres based on 40-foot wide disturbed soil road corridor

## Direct/Indirect Effects

The analysis area for direct and indirect effects for the wetlands resource includes the harvest units and proposed road corridors (both temporary and NFS roads).

### Alternative 1

No wetland would be impacted under Alternative 1 due to harvest or road construction. Vegetation on forested wetlands harvested in the past would continue to grow toward hydrologic maturity. Wetlands impacted by roads in the past would receive minimal use. Vegetation will occupy ditchlines and in the cases of closed roads the roadbed may be occupied by red alder. The road prism would remain in an upland condition. Road ditches, if present, will support a variety of upland and wetland vegetation depending on local conditions and seed



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sources. Hydrologic and vegetation effects would remain limited beyond the road prism (Glaser 1999).

#### Effects Common to All Action Alternatives

##### Alternatives 2, 3, 4, and 5

Timber harvest is proposed in wetlands in all action alternatives. Harvest activities are expected to have a minimal and short-term effect on wetland soil moisture. Removal of the timber would lead to a short-term increase in soil saturation until second-growth establishes evapotranspiration surfaces similar to preharvest conditions. Effects on soil moisture would likely be less in areas where partial cutting is utilized. The proposed harvest in all action alternatives would not pose a long-term negative impact to wetlands in the project area.

The effects of road construction on wetland hydrology and vegetation depend largely on the landscape position of the wetland and the substrate (soil) within the wetland. Wetlands located on ridgetops serve to donate water downslope. Soils in these landscape positions are typically peat soils that are shallow (less than 20 inches thick) over bedrock. Because these landscape positions receive more rain than lower slope positions and the soils have a high water holding capacity, the effects of constructing a shot rock road across these wetlands is usually limited to the area of wetland buried by the shot rock, and effects on vegetation are limited to within a few meters of the shot rock (Glaser 1999).

Roads crossing mid slope and lower slope landscape positions have a greater chance of intercepting soil and surface water as the water moves downslope. While application of BMPs provide some assurance that surface water streams will not be diverted by roads, soil water is sometimes captured and diverted to the nearest stream or drainage-relief culvert. Due to the high levels of precipitation and high soil moisture contents, the intercepted soil water does not translate into drier soils downslope. McGee (2000) found that even though an inside road ditch intercepted soil water flowing downslope, the water wells downslope of the road at her Polk Inlet study site did not display a corresponding decrease in soil moisture. In this landscape position, the effects of roads on wetlands extend a bit farther beyond the road prism. The substrate plays an increasingly important role. Thicker peat and mineral soils occur in these landscape positions. Thick peat soils permeate slowly and have an extremely high water-holding capacity. Effects on these soils are limited to within a few meters of the cutbank and toe of fill (Kahklen and Moll 1999, Wrangell Site). Kahklen and Moll also studied the effects of roads on hydrology of mineral soil (upland) sites and found the effects of the road were greater, but still

limited to within a few meters of the road. Although soil moisture levels beyond the road cut slopes and fill slopes would change, the wetlands are expected to remain wetlands. The soil moisture levels are not expected to change so much that the wetland (outside the disturbed soil corridor) would develop into an upland site.

**Alternative 2**

Alternative 2 proposes to harvest timber from approximately 849 acres of forested wetland. Trees growing on these wetlands would likely grow slower than trees on upland sites. Soil moisture would temporarily increase as described above. Road construction under this alternative would result in conversion of wetland habitat to road on approximately 56 acres of forested wetlands and 2 acres of emergent short sedge wetlands. The specific effects are described above. At 58 acres, the effects on wetlands is the greatest of the four action alternatives (Table 3WT-2).

**Alternative 3**

Alternative 3 proposes to harvest timber from approximately 537 acres of forested wetland. Soil moisture would temporarily increase as described above. Road construction under this alternative would result in conversion of wetland habitat to road on about 38 acres of forested wetlands and 2 acres of emergent short sedge wetlands. The specific effects are described above. In Alternative 3, 40 acres of wetland would be impacted (Table 3WT-2). Alternative 3 is 12 acres more than Alternatives 4 and 5 but 18 acres less than Alternative 2.

**Alternative 4**

Alternative 4 proposes to harvest timber from approximately 495 acres of forested wetland. Soil moisture would temporarily increase on these sites as described above. Road construction proposed under this alternative would result in the conversion of wetland habitat to road on about 27 acres of forested wetland and about an acre of emergent short sedge wetland. The specific effects are described above in Alternative 2. The effects on wetlands would be similar to Alternative 5. At 28 acres, the effects to wetlands are lowest of the action alternatives, and equal to the estimated effects from Alternative 5.

**Alternative 5**

Alternative 5 proposes to harvest timber from approximately 440 acres of forested wetland. Soil moisture would temporarily increase as described above. Road construction proposed under this alternative would result in the conversion of wetland habitat to road on about 27 acres of forested wetland and 1 acre of emergent short sedge wetland. The extent of effects to wetlands are similar to Alternative 4.

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#### **Cumulative Effects Associated with the Alternatives**

The analysis area for cumulative effects for the wetlands resource is the project area.

Foreseeable future management actions include a road storage contract (see Table 3-1) and a proposed recreation trail, both which are not expected to result in impacts to wetlands.

##### **Alternative 1**

Approximately 825 acres (includes approximately 17 acres of emergent short sedge inclusions see Table 3WT-1) of timber have been harvested from forested wetland on the project area. This equates to nearly 5 percent of the forested wetlands on the project area. About 121 acres of forested wetland and 15 acres of emergent short sedge wetland have been converted to road surfaces, ditches and fillslopes (Table 3WT-1). When the effects of road and timber harvest are combined, 5 percent of the forested wetland on the project area have been affected by past management activities. Less than 1 percent of the short sedge wetlands have been affected by past management activities. Approximately 95 percent of the forested wetlands remain in pristine condition and about 96 percent of all project area wetlands remain in pristine condition. On the wetlands where timber has been harvested, vegetation would continue to grow toward hydrologic maturity, and overall soil moisture levels would return to pre-harvest conditions.

Open, drivable roads on the project area would continue to receive incidental use by recreation visitors. Vegetation would grow in ditchlines on all roads and on closed roads vegetation will colonize the road surfaces.

##### **Alternative 2**

Following implementation of Alternative 2, approximately 177 acres of forested wetlands and 17 acres of short sedge wetlands would be converted to roads. About one percent of the forested wetlands would have been converted to roads and less than 1 percent of the emergent short sedge wetlands would be converted to roads. The effects are as described above. Approximately 1,674 acres of forested wetlands would have had timber harvest. Cumulatively, around 10 percent of the forested wetlands would have been harvested. The vegetation on the oldest harvest areas would be more than 30 years old and soil moisture conditions should be returning to some facsimile of pre-harvest conditions. The older harvested areas are vigorous second-growth stands. Following implementation of Alternative 2,



approximately 89 percent of the forested wetland on the project area would remain in an undisturbed condition.

### **Alternative 3**

Following implementation of Alternative 3, approximately 159 acres of forested wetlands and 17 acres of short sedge wetlands would be converted to roads. Less than one percent of the forested wetlands would have been converted to roads and less than 1 percent of the emergent short sedge wetlands would be converted to roads. The effects are as described above. Approximately 1,362 acres of forested wetlands would have had timber harvest. Cumulatively, about 8 percent of the forested wetlands would have been harvested. The vegetation on the oldest harvest areas would be more than 30 years old and soil moisture conditions should be returning to some facsimile of pre-harvest conditions. The older harvested areas are vigorous second-growth stands. Following implementation of Alternative 3, approximately 91 percent of the forested wetlands on the project area would remain in an undisturbed condition.

### **Alternative 4**

Following implementation of Alternative 4, approximately 148 acres of forested wetlands and 16 acres of short sedge wetlands would be converted to roads. Less than one percent of the forested wetlands would have been converted to roads and less than 1 percent of the emergent short sedge wetlands would be converted to roads. The effects are as described above. Approximately 1,320 acres of forested wetlands would have had timber harvest. Cumulatively, nearly 8 percent of the forested wetlands would have been harvested. The vegetation on the oldest harvest areas would more than 30 years old and soil moisture conditions should be returning to some facsimile of pre-harvest conditions. The older harvested areas are vigorous second-growth stands. Following implementation of Alternative 4, about 92 percent of the forested wetlands on the project area would remain in an undisturbed condition.

### **Alternative 5**

Following implementation of Alternative 5, approximately 148 acres of forested wetlands and 16 acres of short sedge wetlands would be converted to roads. Less than one percent of the forested wetlands would have been converted to roads and less than 1 percent of the emergent short sedge wetlands would be converted to roads. The effects are as described above. Approximately 1,265 acres of forested wetlands would have had timber harvest. Cumulatively, about 7 percent of the forested wetlands would have been harvested. The vegetation on the oldest harvest areas would more than 30 years old and soil moisture conditions should be returning to some facsimile of

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pre-harvest conditions. The older harvested areas are vigorous second-growth stands. Following implementation of Alternative 5, approximately 92 percent of the forested wetlands would remain in an undisturbed condition.

## Geology and Karst

This section provides a summary of the geology and karst resources in the project area. Forest-wide Standards and Guidelines for this resource are on pages 4-83 through 4-85 of the Forest Plan. The analysis and results presented in the environmental consequences section are based upon proposed harvest unit boundaries and the overall project area boundary.

Scoping and comments on the Draft EIS for the Scratchings project identified karst, caves, the Geologic Special Area, and paleontological resources as concerns related to the management of the geology resource.

### Affected Environment

Devonian aged volcanic and sedimentary rocks dominate the geology of Suemez Island on the eastern two-thirds of the Island and by Quaternary volcanic rocks on the southwestern one-third. The timber harvest proposed lies almost entirely on Lower to Upper Devonian aged volcanic conglomerate, volcanic breccia, basalt, and tuff interbedded with minor calcareous sandstone, siltstone and limestone.

Outside the proposed harvest areas to the southeast the same rock units dominate and are intruded by Cretaceous quartz diorite. Lying unconformably on top of the Devonian aged rocks is Middle Mississippian aged limestone. The limestone is medium- to thick-bedded, massive, medium-gray, and composed of bryozoan, echinoderm, brachiopod, and coral fragments in lime mud matrix. Some of the limestones are dolomitic. Thin beds of chert are found within the limestone.

The southwestern one-third of Suemez Island is underlain by Quaternary and Tertiary basaltic and andesitic lava, dacite flows, and flowbanded rhyolite, locally with obsidian, minor proportion of interbedded breccia, and tuff. There are identifiable vent localities, and flows are interlayered with cinder deposits. From the most recent eruptive event, flow features can be seen in the dacite that caps the sequence, radiating out from the vent. Three separate obsidian occurrences have been utilized as material sources by early inhabitants for at least the past 10,000 years, trading this material for the manufacture of tools throughout southeast Alaska and Canada. The area underlain by this sequence of volcanic deposits and eruptions is recognized as a Geologic Special Area Land Use Designation (LUD) in the 1997 Forest Plan. An adjustment to this LUD boundary has been proposed in the current Forest Plan Amendment to more fully capture the margins of the volcanic complex.



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Karst and cave systems have developed in the Mississippian aged limestone on the southeastern portion of the Island. As currently mapped some 860 acres of limestone are found here. As mentioned above, the well-bedded limestone lies on top of Devonian volcanic and sedimentary rocks. The cave found here follows the bedding planes of the limestone and the contact with the underlying strata. Within the small streams and pools of these caves abundant troglobitic *Stygobromus* amphipods are found. There is no proposed timber harvest on the southeastern portion of the Island, therefore there are no karst or cave resource concerns.

Adjacent to the proposed timber harvest Unit 635-065 and in one of the small limestone interbeds of the Devonian strata, one losing stream and resurgence, resurgence, and small cave were noted during unit reconnaissance by the project soil scientist. The losing stream and small seasonal pond that flows to the resurgence is not proximal to any proposed harvest. They lie downstream from National Forest System (NFS) Road #1086000 near the junction of NFS Roads #1086000 and #108000.

Of note is one unique paleontological site on Suemez Island. Within one of the oolitic limestone interbeds of the Devonian aged Port Refugio Formation, numerous shark teeth, scales, shark fin spines and most importantly parts of jaw cartilage were recovered. These have been sent to Dr. John Maisey at the American Museum of Natural History for preparation and study. At least two different sharks are represented. Associated finds of early sharks are extremely rare, and the discovery of parts of a Devonian shark skeleton is truly exceptional.

## Environmental Consequences

### Direct/Indirect Effects

#### Alternative 1

Under Alternative 1 no timber harvest or road building would take place and no impact to geology resources would be caused by management activities.

#### Alternatives 2, 3, 4, and 5

Under the action alternatives, the resurgence, small caves and stream which flow from them have been removed from the proposed harvest. A greater than 100-foot buffer has been placed surrounding the resurgence, associated features, and stream which flow from them. The losing stream lies well outside any proposed action. No road

reconstruction is proposed for the section of NFS Road #1080000 which the losing stream flows under; only normal routing maintenance is proposed. None of the action alternatives should have an effect on the karst systems found within the project area.

The proposed activities avoid the Special Interest Area as described in the 1997 Forest Plan or as is being proposed in the Forest Plan Amendment.

None of the proposed activities associated with the Scratchings FEIS would affect the paleontological site deposits because this small area lies well outside any proposed activity.

### **Cumulative Effects Associated with the Alternatives**

#### **Alternatives 1, 2, 3, 4, and 5**

There will be no cumulative effects to geology resources of concern from any of the alternatives because no direct or indirect effects are expected to geology resources.

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### Transportation

The Suemez Island road system is an isolated road system with no direct access to any communities or other road systems. Access to the island is via boat, barge, or floatplane. The only connection to the road system is in Port Refugio. Craig and Hydaburg are the closest communities to Suemez Island. Prince of Wales Island residents use the road system primarily for subsistence hunting though other individuals sometimes use the road system.

The road system was constructed primarily for access to the interior of the island for silvicultural purposes. Initial road construction took place in the mid 1980s with a second entry in the mid 1990s. Traffic on the island is generally in support of timber sales and related activity. A small amount of off highway vehicle traffic occurs during deer hunting season.

Forest roads are planned either for long-term management or for temporary use. National Forest System roads are developed and maintained for long-term land and resource management purposes. Temporary roads are constructed and used for a limited time period and not necessary for long-term resource management. When roads are no longer needed, the road bed is decommissioned (returned to a more natural condition). Decommissioning removes the road from the forest transportation system. Action on the ground for decommissioning ranges from the minimum action of blocking the entrance and removing drainage structures to the maximum action of completely obliterating the road and returning it to the natural contours and replanting vegetation. Road storage involves removing or bypassing all drainage structures to restore natural drainage patterns and adding water bars as needed to control runoff (see Chapter 4, Glossary).

Key terms are defined in Chapter 4 of this Final EIS, in the Glossary.

### Road Analysis Process

When proposed road management activities include road construction, reconstruction, or decommissioning these decisions must be informed by roads analysis (FSM 7712.13c). During the analysis for Scratching EIS project area, a roads analysis was completed for Suemez Island. Part of the analysis is to identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands. The minimum system is the road system determined to be needed to:

- Meet resource and other management objectives adopted in the Tongass Land and Resource Management Plan
- Meet applicable statutory and regulatory requirements
- Reflect long-term funding expectations



- Ensure that the identified system minimizes adverse environmental impacts associated with road construction, reconstruction, decommissioning, and maintenance

A Roads Analysis was conducted for Suemez Island and is located in the project record as the Suemez Island Travel Management Plan (in the Transportation Resource Report, Project Record). This Travel Management Plan is consistent with Prince of Wales Access and Travel Management Plan Environmental Analysis (in progress). The recommendations for the existing and proposed roads on Suemez Island are presented in the road cards in the Scratchings project record; if a decision to harvest is made, road cards included in the decision will be printed in an appendix to the Record of Decision.

Approximately 28 miles of National Forest System (NFS) road exist on Suemez Island. The project area roads analysis developed a travel management plan for the existing roads on Suemez Island. The travel management plan is presented in Table 3TR-1.

### **Existing Roads**

Maintenance and reconditioning of existing National Forest System (NFS) roads is an ongoing process that occurs on a periodic basis. Normally this kind of road work is determined to fit the category of routine repair and maintenance of roads that do not individually or cumulatively have a significant effect on the quality of the human environment and may be categorically excluded from documentation in an EIS or an EA unless scoping indicates extraordinary circumstances (FSH 1909.15, 31.12, #4). The maintenance and reconditioning of NFS roads on the project area may occur before, during and after the project analysis. This work is done through separate service contracts to reduce the backlog of deferred maintenance, recondition roads to comply with best management practices, maintain the existing infrastructure for the proposed timber sale or future harvest entries, and other National Forest management activities. The timing of this work may coincide with this project's analysis but is not part of the proposed action or alternatives being considered.

Deer hunting and trapping are the primary recreational and subsistence activities associated with Suemez Island roads. Off Highway Vehicles (OHVs) are the primary methods of travel on Suemez Island (see Recreation and Subsistence sections of Chapter 3). Prior to designating roads as suitable for mixed traffic between OHVs and other traffic an engineering study to determine the suitability of the roads for this designation will be conducted. OHV use on stored roads

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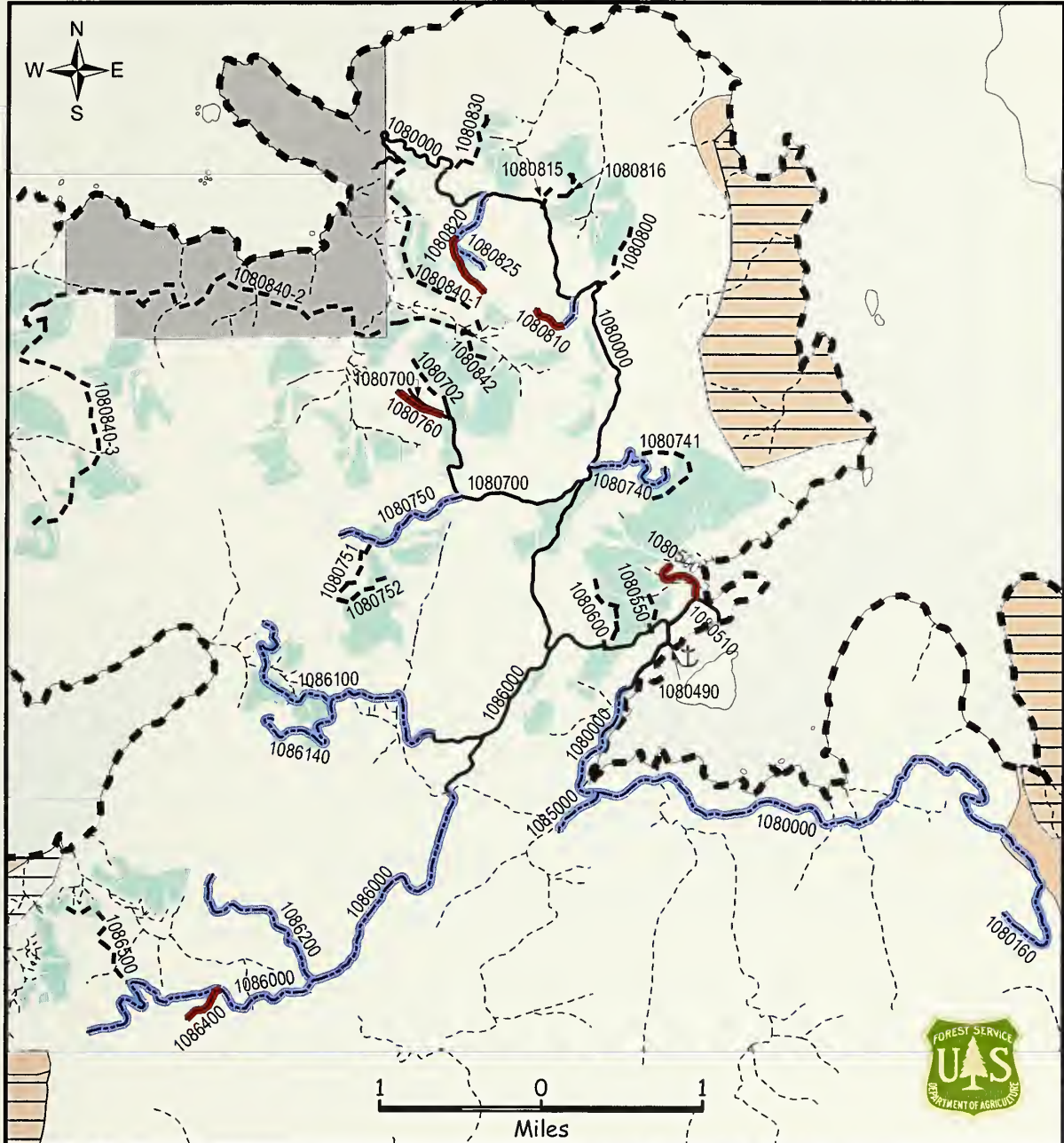
may require construction of suitable stream crossings, designation as a motorized trail, and other measures to protect resources.

**Table 3TR-1. Existing National Forest System Roads on Suemez Island Access and Travel Management Plan\***

Road #	Begin Mile Point	End Mile Point	Length	Objective Maintenance Level	Access Travel Management
1080000	7.3	12.4	5.1	1 - Basic Custodial Care (restricted)	Storage
1080000	12.4	18.8	7.1	2 - High Clearance Vehicle	Open & Maintain OHV
1080000	19.0	19.1	0.1	2 - High Clearance Vehicle	Open & Maintain OHV
1080160	0	0.4	0.4	1 - Basic Custodial Care (restricted)	Storage
1080490	0	0.1	0.1	2 - High Clearance Vehicle	Open & Maintain OHV
1080500	0	0.2	0.2	2 - High Clearance Vehicle	Open & Maintain OHV
1080500	0.2	0.6	0.4	Decommission	Decommission
1080510	0	0.2	0.2	2 - High Clearance Vehicle	Open & Maintain OHV
1080700	0	1.7	1.7	2 - High Clearance Vehicle	Open & Maintain OHV
1080740	0	0.8	0.8	1 - Basic Custodial Care (restricted)	Storage
1080750	0	0.9	0.9	1 - Basic Custodial Care (restricted)	Storage & OHV
1080760	0	0.3	0.3	Decommission	Decommission
1080810	0	0.2	0.2	1 - Basic Custodial Care (restricted)	Storage & OHV
1080810	0.2	0.4	0.2	Decommission	Decommission
1080820	0	0.3	0.3	1 - Basic Custodial Care (restricted)	Storage & OHV
1080820	0.3	0.8	0.4	Decommission	Decommission
1080825	0	0.3	.3	1 - Basic Custodial Care (restricted)	Storage
1085000	0	0.4	0.4	1 - Basic Custodial Care (restricted)	Storage
1086000	0	1.2	1.2	2 - High Clearance Vehicle	Open & Maintain OHV
1086000	1.2	3.0	1.8	1 - Basic Custodial Care (restricted)	Storage & OHV
1086000	3.0	4.9	1.9	1 - Basic Custodial Care (restricted)	Storage
1086100	0	0.4	0.4	2 - High Clearance Vehicle	Open & Maintain OHV
1086100	0.4	2.4	2.00	1 - Basic Custodial Care (restricted)	Storage
1086140	0	0.9	0.9	1 - Basic Custodial Care (restricted)	Storage
1086200	0	1.2	1.2	1 - Basic Custodial Care (restricted)	Storage & OHV
1086400	0	0.3	0.3	Decommission	Decommission

\*Totals may not match others in the EIS due to rounding.

# Scratchings Final EIS - Transportation



- |   |  |
|---|--|
| Project Boundary                              | Stream Classes I & II                      |
| Saltwater                                     | Existing NFS Roads - Open                  |
| University of Alaska Land                     | Existing NFS Roads - Proposed Storage      |
| Proposed Units                                | Existing NFS Roads - Proposed Decommission |
| 1997 Forest Plan Old Growth Habitat LUD (OGR) | Proposed NFS Roads - Storage               |
| Proposed Old Growth Habitat LUD (OGR)         | Log Transfer Facility                      |
- Alternative 2 Units, Roads, and Proposed OGR Shown

Figure 3TR-1

Note: This map is compiled from various digital geographic data and may not meet National Map Accuracy Standards.





### **Storing Existing Roads**

The project area access and travel management plan recommends that about 16 miles of existing road be kept in storage and 2 miles be decommissioned. About 10 miles of existing National Forest System Roads would remain open as maintenance level two (see Chapter 4, Glossary). The roads put into storage and those remaining open are considered necessary for long-term management of the forest, on either an intermittent or constant basis.

### **Effects of the Alternatives**

#### **Road Construction**

All the proposed new roads will be used to transport timber to the marine access facility at Port Refugio and to transport timber harvesting equipment.

All roads, both existing and proposed, would be located, designed, constructed or reconstructed, and maintained following Best Management Practices (BMPs). Refer to the Road Management Objectives in the road cards in the Scratchings project record for more information on specific BMPs.

All proposed new road locations have avoided side slopes over 67% in all alternatives. Proposed roads were located to avoid wetland areas wherever practicable. Crossing a wetland site reduced the overall environmental impacts of a road in some locations. Avoiding steep slopes and aligning roads perpendicular to stream crossings are examples of locations where wetlands were not avoided. The road cards in the Scratchings project record give details of road locations relative to wetland types.

Newly constructed NFS roads are scheduled for storage. Due to the isolated nature of the road system, which makes maintenance costly and difficult, and their infrequency of use, storage is the most appropriate strategy for these roads.

#### **Log Transfer Facility**

The transfer of harvested timber requires that logs be hauled to a site where they can be removed from trucks, transferred to saltwater for rafting or loaded onto barges, and then towed to a mill. These sites are termed “log transfer facilities,” or “marine access facilities.” One log transfer facility (LTF) is located within the project area at Port Refugio. The Port Refugio LTF has been used often since it was constructed in 1986. The last dive survey performed at the LTF was in 2001. The survey covered a total of 11,195 square feet. No continuous

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cover of bark debris was found. Patches of bark debris covered about 7,426 square feet or 0.17 acres. Prior to operation all required permits will be obtained for the LTF.

Deferred maintenance needs for the LTF are currently being assessed; maintenance and improvements will be performed to meet current standards and requirements. Options include reconstruction of the existing eight percent ramp or a land-to-barge transfer system. A land-to-barge transfer system with a 14 percent ramp terminating at a steep rock face will give the option to load directly onto a barge. Trucks are unloaded at the LTF site and then placed directly on the barge by a rubber tired loader. Log bundles could also be released into the water from the loader at the waterline and bundled into log rafts. All work on the LTF will be restricted to the current footprint of the existing structure. Permits currently required for construction and use of the LTF include:

- Section 10 of the Rivers and Harbors Act of 1899 Corps of Engineers approval for the construction of structures or work in navigable waters of the United States
- Tidelands permit from the State of Alaska, Department of Environmental Conservation
- Certification of compliance with Alaska Water Quality Standards (Section 401 Certification) from the State of Alaska, Department of Environmental Conservation
- Storm Water Discharge Permit and a permit for discharge of bark and woody debris from the US EPA (Section 402 of the Clean Water Act)

All required permits will be in place before any action is taken or logs are moved over the LTF in Port Refugio.

#### **Log storage**

A log storage area is located adjacent to the Port Refugio LTF. This area is approximately two acres. Approximately three to five acres of log storage area is required for barge facilities. A rock pit located 0.23 miles from the LTF could provide additional storage. The area above the LTF could be expanded to provide additional storage if needed.

#### **Other facilities**

Land based camps have not been used in the past and no new land-based camps are planned for this project. The operator may use a temporary floating camp in Port Refugio. Permits for a floating camp will be obtained by the operator. Permits for floating camps are needed from the Army Corps of Engineers and the Alaska Department of Environmental Conservation.



Logging camps would be required to obtain and comply with permits from the State of Alaska, and the Forest Plan and Forest Service contract provisions. Camps associated with an LTF site can cause additional use of fisheries and marine sources. There is no data currently available on the amount of additional use occurring at various camp locations on the Forest. The competition for resources at or near logging camp locations would likely increase, but only for the duration of the camp. The Board of Fisheries and Game for the Alaska Department of Fish and Game (ADF&G) can control the amount of harvest by setting bag limits, shortening season lengths, or by instituting a complete closure of a fishery. If resource problems arise because of increased resource pressure due to a logging camp, the Forest Service would aid the ADF&G in attempting to resolve the problem. However, with a project of this size and duration, it is unlikely that utilization would progress far enough to cause adverse consequences on the fisheries or marine resources.

Other upland facilities include field office, workshops and fuel storage. Activities with potential for spill of hazardous substances such as fuel require a Spill Prevention, Control, and Countermeasure (SPCC) Plan. Forest Service environmental engineers will review all SPCC plans prior to any petroleum products being brought into the site or being stored on site. These plans will comply with all State and Federal permits and laws. Operators of these facilities will obtain all required permits.

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**Table 3TR-2. Existing and Proposed Miles of Open and Stored NFS Road in the Scratchings Project Area**

	<b>Alt. 1</b>	<b>Alt. 2</b>	<b>Alt. 3</b>	<b>Alt. 4</b>	<b>Alt. 5</b>
<b>Total Miles of NFS road</b>	28	28	28	28	28
<b>Miles of existing open NFS road (includes OHV accessible)</b>	22	22	22	22	22
<b>Miles of existing stored NFS road</b>	6	6	6	6	6
<b>Miles of existing stored NFS road to be temporarily re-opened for harvest</b>	0	0.8	0.8	0.8	0.8
<b>Miles of existing NFS road to be placed in storage or decommissioned</b>	0	11	11	11	11
<b>Miles of proposed new NFS road</b>	0	12	7	4	5
<b>Total miles of new NFS road to be placed in storage or decommissioned</b>	0	12	7	4	5
<b>Miles of open NFS road after storage activities</b>	22	10	10	10	10
<b>Miles of stored NFS road allowing OHV use</b>	0	4	4	4	4
<b>Open road density after storage activities</b>	0.4	0.2	0.2	0.2	0.2

(Mileages may not sum to totals shown due to rounding)

**Table 3TR-2. Estimated Road Construction Costs by Alternative**

	<b>Alt. 1</b>	<b>Alt. 2</b>	<b>Alt. 3</b>	<b>Alt. 4</b>	<b>Alt. 5</b>
<b>NFS road construction costs</b>	0	\$2,430,000	\$1,304,000	\$663,000	\$1,031,000
<b>Temporary road construction costs</b>	0	\$725,000	\$590,000	\$348,000	\$438,000
<b>Road reconstruction costs</b>	0	\$31,000	\$31,000	\$31,000	\$31,000
<b>Total road costs</b>	0	\$3,186,000	\$1,925,000	\$1,042,000	\$1,500,000

New construction costs based on cost per road, located in project file. Reconstruction based on \$38,000 per mile estimate. Temporary road construction based on \$110,000 per mile estimate.

## **Direct and Indirect Effects**

The effects of roads are resource specific, and are addressed in each resource section affected in Chapter 3. Table 3TR-3 displays the road construction costs for each alternative.

### **Alternative 1**

The maintenance of existing roads would not change. This alternative does not propose any new roads. Current management plans would continue to guide the management of Suemez Island roads.

### **Alternative 2**

Alternative 2 would construct about 12 miles of new NFS road and about 7 miles of temporary road (see Table 3TR-2). Less than 1 mile of currently stored NFS road would be temporarily reopened and then stored after timber harvest. New NFS roads would be placed in storage or decommissioned and temporary roads would be stabilized, waterbarred and returned to a more natural state after timber harvest. About 11 miles of existing NFS road would be placed in storage or decommissioned with this alternative. About 10 miles would remain open in the project area.

Drainage structures in live streams along stored road segments may be removed; ditch relief culverts may be bypassed with trenches dug along the side of the culverts. This would permit culverts to be reused if the road is needed in the future. Decommissioned roads would have all drainage structures removed. This alternative removes all culverts restricting fish passage. Alternative 2 would cross five Class I streams with construction of Road 1080840. Bridges would be used for these crossings.

### **Alternative 3**

Alternative 3 would construct about 7 miles of new NFS road and about 5 miles of temporary road (see Table 3TR-2). Less than 1 mile of currently stored NFS road would be temporarily reopened and then stored after timber harvest. New NFS roads would be placed in storage or decommissioned and temporary roads would be stabilized, waterbarred, and returned to a more natural state after timber harvest. About 11 miles of existing NFS road would be placed in storage or decommissioned with this alternative. About 10 miles would remain open in the project area.

Drainage structures in live streams along the stored road segments may be removed; ditch relief culverts may be bypassed with trenches dug along the side of the culverts. This would permit culverts to be reused if the road is needed in the future. Decommissioned roads would have



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all drainage structures removed. This alternative removes all culverts restricting fish passage. Alternative 3 would cross one Class I stream with construction of Road 1080840. This stream would be crossed with a bridge.

#### **Alternative 4**

Alternative 4 would construct about 4 miles of new NFS road and about 3 miles of temporary road (see Table 3TR-2). Less than 1 mile of currently stored NFS road would be temporarily reopened and then stored after timber harvest. After timber harvest, the new NFS roads would be placed in storage or decommissioned and temporary roads would be stabilized, waterbarred and returned to a more natural state. About 11 miles of existing NFS road would be placed in storage or decommissioned with this alternative. About 10 miles would remain open in the project area.

Drainage structures in live streams along the stored road segments may be removed; ditch relief culverts may be bypassed with trenches dug along the side of the culverts. This would permit culverts to be reused if the road is needed in the future. This alternative removes all culverts restricting fish passage. Decommissioned roads would have all drainage structures removed. No Class I streams are crossed with new roads in Alternative 4.

#### **Alternative 5**

Alternative 5 would construct about 5 miles of new NFS road and about 4 miles of temporary road (see Table 3TR-2). Less than 1 mile of currently stored NFS road would be temporarily reopened and then stored after timber harvest. After timber harvest, the new NFS roads would be placed in storage or decommissioned and temporary roads would be stabilized, waterbarred and returned to a more natural state. About 11 miles of existing NFS road would be placed in storage or decommissioned with this alternative. A total of 10 miles would remain open in the project area.

Drainage structures in live streams along the stored road segments may be removed; ditch relief culverts may be bypassed with trenches dug along the side of the culverts. This would permit culverts to be reused if the road is needed in the future. This alternative removes all culverts restricting fish passage. Decommissioned roads would have all drainage structures removed. Alternative 5 would cross one Class I stream with construction of Road 1080840.

### Cumulative Effects

The cumulative effects analysis area is the entire project area.

A road maintenance contract scheduled for 2007 will store about 6 miles of road, remove about 70 pipes, and reduce the risk to fish habitat along NFS Road 1080000 from milepost 7.3 to milepost 12.8 in the eastern portion of the project area. This section of road is not planned for use in the Scratchings Timber sale. The pipes that are scheduled for removal include 16 fish culverts of which 11 have been identified as 'red pipes'. This contract will remove 50 percent of the red pipes that have been identified on Suemez Island.

Alternatives 2, 3, 4, and 5 include the expansion of the Suemez Island road system during the period of timber harvest activities. Each of these action alternatives would store or decommission all new NFS roads. Each action alternative will implement the Suemez Island Travel Management Plan. Upon implementation of the Suemez Island Travel Management Plan 18 miles of existing NFS road will be stored and 10 miles will remain open and drivable (see Table 3TR-2). Road densities and vehicle access would be reduced. Foot access on stored and decommissioned roads would still be available.

Road storage and decommissioning would have beneficial effects to water quality, and would reduce the amount of road maintenance required on Suemez Island. The amount of public road use on Suemez Island is not expected to change. Public use is primarily off highway vehicle use during hunting season and those users would continue to come to Suemez and use the available road system.

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#### Subsistence

The U.S. Congress recognized the importance of subsistence resource gathering to the rural communities of Alaska with the passage of the Alaska National Interest Lands Conservation Act (ANILCA, or Public Law 96-487). ANILCA (Section 803) defines subsistence as:

“The customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools or transportation; for the making and selling of handicraft articles out of non-edible by-products of fish and wildlife resources taken for personal or family consumption; and for customary trade.”

ANILCA provides for the continuation of the opportunity for subsistence uses by rural residents of Alaska on federal public lands. The act also legislates that customary and traditional subsistence uses of renewable resources shall be the priority consumptive uses of all such resources on the public lands of Alaska. Rural residents are provided a preference for the taking of subsistence resources on public lands.

#### Types and Amounts of Resources Gathered

Subsistence use areas and the levels of harvest were estimated from a variety of sources. Alaska Department of Fish and Game records the level of community harvests for selected species, such as deer, moose, black bear, wolf, and otter, within specific areas referred to as Wildlife Analysis Areas (WAAs). Suemez Island is WAA 901. The Alaska Department of Fish and Game harvest data and Tongass Resource Use Cooperative Survey (TRUCS) maps reveal subsistence use areas for deer, marine invertebrates, marine mammals, salmon, and other fish within the project area. Other sources of subsistence use information came from public testimony, published accounts of community use surveys, and the Forest Plan FEIS Part 2, Appendix H. Table 3S-1 displays estimated subsistence resource use (in pounds per year) by Hydaburg, Craig, Klawock and Thorne Bay residents, as reported by the Alaska Department of Fish and Game. Deer, black bear, and furbearer hunting and trapping occur in the project area's beach-fringe and along the road system, which allows inland forest access.

Suemez Island can be difficult to reach during the winter months. The road system on the island is not tied to other road systems on Prince of Wales Island and vehicles must be loaded and unloaded at the log transfer facility in Port Refugio. Off-highway vehicles (OHVs) are the most common vehicles used on Suemez Island.



## **Communities Traditionally Using the Scratchings Project Area**

Hydaburg and Craig residents are the primary users of the project area with some use reported by Klawock and Thorne Bay as well. All four of these communities are located on Prince of Wales Island. Some of the subsistence activities these residents engage in are fishing; deer and waterfowl hunting; and gathering seaweed, medicinal plants, shellfish, and berries. Users may transport vehicles to the Suemez Island road system via boat or they may use the roads for foot travel.

### **Hydaburg**

Hydaburg is situated on the west side of Prince of Wales Island, approximately 20 miles east of the Scratchings project area. The 1995 census population of Hydaburg was 406 people and the population was 370 in 2003. Approximately 87 percent of the population is Alaska Native. In the early 1900s the major Haida population centers on western Prince of Wales Island were Howkan, Klinkwan, Sukkwan, and Kaigani. The Haida from these four villages consolidated at Hydaburg in 1911. Hydaburg was incorporated in 1972. One hundred percent of the households in Hydaburg report using some kind of subsistence resource, with an average household use of 1,159 pounds per year. The subsistence resources commonly used by Hydaburg residents include salmon, halibut, (fish totaled 759 pounds) and deer (147 pounds). Crab, shrimp (marine invertebrates totaled 177 pounds), berries (21 pounds), other vegetation (48 pounds) and wood are also important (Turek, et al. 2004). WAA 901, Suemez Island, ranked 3<sup>rd</sup> in subsistence deer use by Hydaburg residents with an average of seven deer a year taken from the island between 1987 and 1991 (Turek et al. 1998). Users may transport vehicles to the Suemez Island road system via boat or they may use the roads for foot travel.

### **Craig**

Craig is located on the west side of Prince of Wales Island, approximately 15 air miles northeast of the Scratchings project area. The population of Craig was reportedly 1,397 people in 2000 (Census Bureau webpage). Approximately 28 percent of the population is Alaska Native (Turek et al. 1998). The modern community of Craig grew surrounding the saltery established by Craig Millar in 1907. Craig has history of involvement in hunting, fishing, and the gathering of wild foods. Craig has a variety of income sources. State, federal, and local government; the timber industry; commercial fishing; the processing industry; retail and private businesses all contribute to the economy of Craig. Ninety-seven percent of the households in Craig reported they use subsistence resources in some way. They consume an average of almost 600 pounds of meat and fish annually. The subsistence resources most often used are fish (331 pounds), deer (132

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pounds), and marine invertebrates (92 pounds). Other resources used include vegetation (20 pounds) and berries (9 pounds) (Turek et al. 2004). Suemez Island, WAA 901, ranked 11<sup>th</sup> in deer subsistence use by Craig residents with an average of 11 deer harvested annually (Turek et al. 2004). Users may transport vehicles to the Suemez Island road system via boat or they may use the roads for foot travel.

#### **Klawock**

The community of Klawock is located on the west side of Prince of Wales Island, approximately seven miles north of the community of Craig. Archaeological evidence and oral tradition document a Tlingit village at the mouth of the Klawock River for several thousand years. The contemporary site of Klawock was first recorded in 1853. The city of Klawock was incorporated in 1929. The population of the community was estimated at 854 in 2000 (Census Bureau webpage). One hundred percent of the households in Klawock reported they utilize some kind of subsistence resource. An average of almost 870 pounds of meat and fish are consumed annually. The subsistence resources most often used are fish (518 pounds), deer (159 pounds), and marine invertebrates (142 pounds). Other resources used include vegetation (25 pounds) and berries (13 pounds) (Turek et al. 2004). Suemez Island, WAA 901, was ranked 9<sup>th</sup> in deer subsistence use by Klawock residents with an average of seven deer taken annually between 1987 and 1991 (Turek et al. 1998). Users may transport vehicles to the Suemez Island road system via boat or they may use the roads for foot travel.

#### **Thorne Bay**

Thorne Bay is located on the east side of Prince of Wales Island about 50 miles northeast of the project area. Thorne Bay was incorporated in 1982. The population of the community was estimated to be 557 in 2000 (Census Bureau webpage). Suemez Island, WAA 901, was ranked 14<sup>th</sup> (in a 5-way tie) for use by Thorne Bay residents, with an average of only two deer taken annually (Turek et al. 1998). One hundred percent of the households in Thorne Bay reported they utilize some kind of subsistence resource. An average of almost 578 pounds of meat and fish are consumed annually. The subsistence resources most often used are fish (368 pounds), deer (112 pounds), and marine invertebrates (73 pounds). Other resources used include vegetation (11 pounds) and berries (nine pounds) (Turek et al. 2004). Users may transport vehicles to the Suemez Island road system via boat or they may use the roads for foot travel.

**Table 3S-1. Estimated Annual Subsistence Resource Use by Household**

<b>Resource by pounds</b>	<b>Hydaburg</b>	<b>Craig</b>	<b>Klawock</b>	<b>Thorne Bay</b>
<b>All Fish</b>	759	331	518	368
<b>Salmon</b>	474	131	265	146
<b>All Land Mammals</b>	148	138	165	122
<b>Marine Invertebrates</b>	177	92	142	73
<b>Marine Mammals</b>	24	18	18	0
<b>Birds*</b>	3	2	3	3
<b>Plants and Berries**</b>	78	39	49	22

Source: Deer Hunting Patterns, Resource Populations and Management Issues on Prince of Wales Island, June 2004, p. V-6-8; V-15-17; V-21-23 and V-30-32.

\* Includes birds and eggs

\*\* Includes vegetation, berries, plants/greens/mushrooms; and seaweed and kelp

## Wildlife Effects and Evaluation

### Abundance and Distribution of Deer

The evaluation of deer is based on a comparison of supply and demand. The deer habitat capability model developed as part of the Forest Plan was used in this analysis to provide an estimate of the potential number of deer available for harvest that the habitat, within the WAA, can support over time. This is the potential supply available for all use.

We assume communities that currently use the project area for subsistence resources would continue do so in the foreseeable future. Approximately ten percent of the deer population can be harvested on a sustained basis if the population is near carrying capacity (Forest Plan FEIS Part 1, page 3-361). Thus, the minimum number of deer needed in an area is approximately ten times the subsistence hunter demand for deer or a restriction on subsistence hunting may be needed. The Alaska Department of Fish and Game reports that an average of 38 deer were harvested per year from WAA 901 between 1994 and 2004. The largest harvest occurred in 1995 with 89 deer being taken. The smallest harvest occurred in 2003 with 5 deer being taken.

### Effects of the Alternatives for WAA 901 (Suemez Island)

The Wildlife section of this chapter describes the deer habitat capability model that was used to estimate the effects of the proposed timber harvest on deer habitat. Table 3S-2 shows the estimated historic



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and current deer available to hunters in WAA 901 based on the model results. The results show that the historic habitat capability number of deer available to hunters after accounting for wolf predation was approximately 40 deer per square mile, prior to large scale timber harvests in the area. Previous timber harvests in the WAA have reduced this number approximately seven percent, according to the model. The estimated number of deer currently available to hunters in WAA 901 is approximately 37 deer per square mile.

**Table 3S-2. Deer Density in WAA 901 (the project area) from 1954 to Present**

<b>Historic (1954) condition</b>	40 deer per square mile
<b>Current (2007) condition</b>	37 deer per square mile
<b>Percent change</b>	-7%

Table 3S-3 shows the changes in the estimated deer density in WAA 901 available to hunters would be affected by each alternative. The deer model estimated a less than one percent change in the deer density on Suemez Island (WAA 901). See the Wildlife section of Chapter 3 for information on the deer model and the deer calculations.

**Table 3S-3. Estimated Deer Density After Harvest in WAA 901 (the project area) by Alternative\***

	<b>Alt. 1</b>	<b>Alt. 2</b>	<b>Alt. 3</b>	<b>Alt. 4</b>	<b>Alt. 5</b>
<b>Ave. number of deer per square mile</b>	37	37	37	37	37

\*All numbers are rounded to the nearest whole number. The deer model assumes that an area with a Habitat Suitability Index (HSI) score of 1.0 could support 100 deer per square mile. HSI scores have been reduced by 36 percent to account for the effects of wolf predation in accordance with current Forest direction.

All of the alternatives would maintain a deer population sufficient to meet deer hunting demand on Suemez Island based on model prediction. The 1995 harvest year was highest with 89 deer reported. A population of 890 deer would be needed to meet the demand. The deer habitat on Suemez Island has been estimated to support at least twice as many deer as needed to meet subsistence hunter demand.

Most of the land in the Southern Outer Island Biogeographic Province is in non-development land use designations. The biogeographic province that Suemez Island is in also includes Heceta, Lulu, Baker, Noyes, San Fernando, St. Johns, Coronation, Warren and the Murielle Islands. WAA 901 includes all of Suemez Island; WAA 902 is Lulu, Baker, Noyes and St. Johns and San Fernando Islands. WAA 1003 is Heceta Island, Warren Island is WAA 1524 and Coronation Island is WAA 5015. The only islands that have had any kind of harvest activity occur on them are Suemez and Heceta. Table 3S-4 shows the

estimated deer densities for each of these WAAs for 1954, 1995 and 2095. Information in the table is from Appendix 12 to Appendix N of the Forest Plan. There has been no management activity in any of these WAAs between 1995 and the present.

**Table 3S-4 Deer Densities for Biogeographic Province by WAA**

WAA	1954	1995	% change from 1954	2095	% change from 1954	Total acres
901	40	37	-7%	37	-8%*	58 mi <sup>2</sup>
902	29	29	0	29	0	163 mi <sup>2</sup>
1003	48	35	-27%	24	-50%	68 mi <sup>2</sup>
1524	57	57	0	57	0	16 mi <sup>2</sup>
5015	51	51	0	51	0	29 mi <sup>2</sup>

\* The Scratchings project results in a less than 1% decline in the overall deer numbers.

## Abundance and Distribution of Furbearers

According to the State of Alaska, furbearers appear to be abundant and the populations are stable in Game Management Unit 2, which consists of Prince of Wales Island and many smaller islands to the west including Suemez Island. Harvest is well below sustained yield potentials. Trapping activities are very light on Suemez Island due to its relative remoteness, see Table 3S-5. The wolf population is stable and at a high level, according the Alaska Department of Fish and Game. Wolf viability is not a concern on Suemez Island (personal communication with B. Porter, January 31, 2006).

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**Table 3S-5. Harvest History on Suemez Island**

Year	Black Bear	Beaver	Otter	Marten	Wolf	Deer
1993	0	0	0	0	0	unknown
1994	0	0	0	0	0	unknown
1995	0	0	0	0	0	unknown
1996	0	0	0	0	8	8
1997	0	0	0	0	5	6
1998	1	0	0	0	6	19
1999	0	0	0	0	3	11
2000	0	0	0	0	0	48
2001	0	0	0	21	0	37
2002	2	0	20	0	0	5
2003	1	0	0	0	9	22
2004	0	0	0	0	0	unknown
2005	0	0	0	0	0	unknown
<b>Total</b>	<b>4</b>	<b>0</b>	<b>20</b>	<b>21</b>	<b>31</b>	<b>156</b>

Information from B. Porter, ADF&G January 31, 2006

#### **Abundance and Distribution of Black Bear**

Harvest data indicate that an average of less than one bear per year is harvested on Suemez Island.

#### **Access to Wildlife**

The primary modes of access for harvesting wildlife include boats, foot travel, cars and all-terrain vehicles. The existing road system does not connect to any year-round community or the Prince of Wales ferry system. Access by boat and foot would not be restricted by any of the action alternatives. Access to areas along the beach would not change. All temporary roads would be closed after timber harvest is complete in all action alternatives. About 22 miles of open road exist on Suemez Island. As a result of the proposed timber sale the miles of road and the road density would temporarily increase on Suemez Island.

**Table 3S-6. Road density (miles/mile<sup>2</sup>)**

	<b>Below 1200</b>	<b>All Elevations</b>
	<b>All roads</b>	<b>All Roads</b>
<b>Alt. 1 (existing)</b>	0.46	0.49
<b>Alt. 2</b>	0.67	0.7
<b>Alt. 3</b>	0.58	0.62
<b>Alt. 4</b>	0.53	0.56
<b>Alt. 5</b>	0.55	0.59



**Table 3S-7. Road Density at the end of the project (miles/mile<sup>2</sup>)**

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
<b>All open roads</b>	0.49	0.18	0.18	0.18	0.18
<b>Below 1200 feet</b>	0.46	0.17	0.17	0.17	0.17

## **Competition for Wildlife**

Competition is closely linked to access. Opening an area up by increasing access may be a favorable development for subsistence users who often depend on roads to access and transport animals out of the field. Increased access can also increase competition for subsistence resources, and may cause an adverse impact if over-harvesting occurs. An increased competition for the wildlife resources may occur during the duration of the timber sale activity which is expected to be 2-3 years.

Subsistence users would have ANILCA preference over non-subsistence users if game populations were reduced to levels that required restrictions on harvests; however on Suemez Island it appears that supply is high and demand relatively low. No reductions in game populations or harvest restrictions are expected due to increased competition in any of the action alternatives.

## **Abundance and Distribution of Upland Birds and Waterfowl**

Spruce grouse is the only type of upland bird distributed across Suemez Island. Waterfowl are known to utilize Port Refugio during the spring and fall migration but this bay is not known as a highly productive area when compared to other areas.

## **Competition for Upland Birds and Waterfowl**

Competition for upland birds and waterfowl should not be affected by any of the proposed activities. The number of hunters in the area may temporarily increase during active logging operations, but long-term competition would not be affected.

## **Subsistence Use Effects to Upland Birds and Waterfowl**

Upland birds and waterfowl do not contribute a large percentage of the foods for the people of Hydaburg (0.0 pounds), Craig (0.04 pounds), Klawock (0.01 pounds) or Thorne Bay (0.13 pounds) (Turek et al. 2004). The timber harvest activity prescribed by this project is not expected to change the distribution, abundance or use of these resources in the Scratchings area.

## **Fish and Shellfish Effects and Evaluation**

### **Abundance and Distribution of Fish and Shellfish**

Protective stream buffers as defined in the Forest Plan standards and

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guidelines would minimize adverse effects to fish habitat. The risk of impact to fish populations due to timber harvest would be minimal because of Tongass Timber Reform Act (TTRA) stream buffers, Forest Plan Riparian Standards and Guidelines, and road construction BMPs. No measurable effects on shellfish populations are expected for all action alternatives. Use of the Port Refugio Log Transfer Facility (LTF) would present the greatest potential for impacts to shellfish. Mitigation measures should reduce these potential effects.

#### **Access to Fish and Shellfish**

Historically, most of the access to the road system has been from the LTF. Road construction and reconstruction may temporarily reduce access for fish and shellfish in the project area.

#### **Competition for Fish and Shellfish**

Fishing and shellfish gathering occurs primarily from boats and on beaches. Competition for fish and shellfish is not expected to increase due to the Scratchings project.

#### **Subsistence Fish and Shellfish Effects and Evaluation**

Fish and shellfish comprise a large portion of the diet of most residents in Southeast Alaska. Subsistence fish and marine invertebrate use areas were derived largely from the TRUCS maps. Over 70 percent of the subsistence resources gathered by Craig residents are fish (55 percent) and shellfish (15 percent). Hydaburg gathered 65 percent fish and 15 percent shellfish for a total of 80 percent. Klawock reported 60 percent fish and 16 percent shellfish for a total of 76 percent. Thorne Bay had 64 percent fish and 13 percent shellfish (77 percent total) (Turek et al. 2004). Forest Plan standards and guidelines for Riparian Areas would be followed to maintain habitat productivity for fish and shellfish. None of the alternatives are anticipated to affect subsistence use of fish and shellfish.

#### **Vegetation Effects and Evaluation**

##### **Food Plants**

Subsistence plant foods consist of a variety of species. Some of the most sought after types include kelp, seaweed, goose tongue, mushrooms and berries. Data indicate that plant foods make up eight percent of the harvest in Hydaburg, seven percent of the harvest in Craig, six percent of the harvest in Klawock, and four percent of the per capita harvest of the household subsistence harvests in Thorne Bay (Turek et al. 2004). Roads and previous timber harvest areas within the project area are excellent berry harvest locations since many berry species thrive on the open exposed slopes (Alaback 1982). Most traditional gathering of other plants and foods occurs near beach and

estuarine areas. None of the alternatives are expected to negatively affect subsistence plant gathering for food based on a projected increase of berries due to timber harvest and the locations of the potential activities. Reasonably foreseeable effects of the action alternatives on the abundance and distribution of food plants would be minimal and favorable.

### **Marine Mammals Effects and Evaluation**

The Marine Mammal Protection Act of 1972 prohibits the taking of marine mammals by anyone other than Alaska Natives. The Act allows Alaska Natives to take marine mammals for subsistence or to create authentic native handicrafts or clothing as long as it is not accomplished in a wasteful manner. Currently, there is no evidence to suggest that timber harvest and related development activities have any impact on marine mammals. No significant restriction to the subsistence use of marine mammals is expected under any alternative.

### **Cumulative Effects**

The subsistence analysis evaluates whether the project, in combination with other past, present, and reasonably foreseeable future actions, may significantly restrict subsistence uses. Although the precise location of future projects is not clearly known, some conclusions can be reasonably made about future impacts. The analysis for the Scratchings project area indicates that for any action alternative, the proposed timber harvest, in combination with past timber harvest, would not likely result in significant restrictions on subsistence use of resources. The Forest Plan addressed the long-term consequences on subsistence and concluded that implementation of the Forest Plan may result in a significant restriction to subsistence use of deer due to the potential effects of projects on the abundance and distribution of these resources, and on competition for these resources (Forest Plan ROD, page 24). Several measures are designed to maintain subsistence species over time, especially deer populations. Habitat is set aside in 1,000-foot beach and estuary buffers. These areas protect key habitats for deer winter use, black bears, furbearers, waterfowl, and intertidal food gathering. Application of Forest Plan Riparian Standards and Guidelines would minimize future impacts to fish habitat. Old-growth habitat LUDs have been located to include some of the most important deer winter habitat. Other possible measures include partial harvest prescriptions and thinning second-growth to promote understory vegetation for browse. Trees would also be retained for stream buffers and windfirm buffers. Thinning of the harvested stands would be scheduled as needed. The Scratchings project area encompasses all of WAA 901.

The Federal Subsistence Board has the authority to regulate



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subsistence and non-subsistence use of resources in the Tongass National Forest when those resources are approaching scarcity. This type of action, as prescribed by ANILCA Section 804, could be used to ensure the availability of adequate subsistence resources needed by the rural communities using the Scratchings project area if necessary.

#### **ANILCA Compliance**

The actions proposed in this document have been examined to determine whether they are in compliance with the Alaska National Interest Lands Conservation Act (ANILCA Section 810). The laws and direction that have been considered include:

- The National Forest Management Act of 1976 and its implementing regulations
- The Alaska National Interest Lands Conservation Act (ANILCA) of 1980
- The Tongass Land and Resource Management Plan (1997, as amended)
- The Tongass Timber Reform Act (TTRA) of 1990
- The Alaska State Forest Practices Act
- The Alaska Coastal Management Program
- The Multiple-use Sustained Yield Act (1960)
- The USDA Forest Service Subsistence Management and Use Handbook (FSH 2609.25)

The proposed activities have been determined to be in compliance with these standards, and with ANILCA.

#### **Necessary and Consistent with Sound Management of Public Land**

ANILCA Title VIII places an emphasis on the maintenance of subsistence resources and lifestyles. However, the Act also provides for adequate opportunity for satisfaction of the economic and social needs of the State of Alaska and its people and recognizes that public lands are necessary and appropriate for more intensive uses. The Act also requires the USDA Forest Service to make available 4.5 billion board feet per decade from the Tongass National Forest. The TTRA removed the 4.5 billion board foot requirement, but directs the USDA Forest Service to seek to meet market demand for timber to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources, and subject to applicable law. The Scratchings project is necessary as a component of the timber management program designed to implement the Forest Plan and to meet TTRA direction. There is currently a market demand for timber, a limited timber supply from other sources, and an under-utilized mill capacity in the region. The volume from the project is a component of the 10-year timber sale schedule, which seeks to provide timber to industry in an even-flow over the planning cycle. The project can help meet the Forest Plan and TTRA objectives, while also providing

reasonable protection measures for forest resources, especially for subsistence. The project is consistent with the Forest Plan, laws, regulations, policies, public needs, and the capabilities of the land.

### **ANILCA 810 Hearing**

An ANILCA 810 Hearing was scheduled between the publication of the Draft and Final EIS in accordance with law and Forest direction. Following publication of the Draft EIS, subsistence hearings were held in Craig on July 19, 2006 and Hydaburg on July 20, 2006. No oral testimony was received at these hearings. A single written comment received from the Hydaburg hearing stated that the Scratchings project was too large.

### **Amount of Land Necessary to Accomplish the Purpose of the Proposed Action**

The amount of public land involved to implement the Scratchings project (considering sound multiple use management of public lands) is the minimum necessary to accomplish the purpose of the project. It is not possible to lessen timber harvest in one area and concentrate it in another locale without impacting one or more rural communities' important subsistence use areas. In addition, harvestable populations of subsistence wildlife species could not be maintained in a natural distribution across the forest if harvest were concentrated in specific areas. A well-distributed population of species is required by the National Forest Management Act and is one of the objectives of the Forest Plan. The Forest Plan allocated many of the important subsistence use areas to land use designations that do not allow timber harvest. Other areas that are important to subsistence use were protected through standards and guidelines such as the 1,000-foot beach and estuary buffers and the streamside Riparian Management Areas that do not allow timber harvest. Each alternative provides a sound location and design for harvest units, and uses short temporary roads from the existing road system to access harvest areas. The minimum amount of land was used to resolve resource concerns while meeting the purpose and need for this project in a practical and efficient manner. Up to five percent of the acres in Wildlife Analysis Area 901 would be harvested with this project. Resources are protected to the maximum extent practicable and the project meets or exceeds the Forest Plan standards and guidelines.

### **Reasonable Steps to Minimize Adverse Impacts upon Subsistence Uses and Resources**

The Forest Plan took considerable steps to minimize adverse impacts to subsistence uses and resources. Forest Plan standards and guidelines protect important deer winter habitat. Other reasonable steps taken to minimize adverse impacts to subsistence resources include: the overall

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Forest Plan land use designation strategy, the old-growth habitat reserve strategy, travel and access management planning, Forest Plan standards and guidelines for stream, beach and estuary buffers, and the use of silvicultural systems that maintain components of overstory tree canopy. Chapter 2 and Appendix B of this Draft EIS describe standards and guidelines that would be implemented as part of each alternative. Most of the standards and guidelines are designed to maintain fish and wildlife habitat productivity while meeting timber harvest objectives. Most of the high value deer winter habitat is not proposed for timber harvest in the Scratchings project area. The project reflects a reasonable balance between the projected need for timber from the project area to help meet the Forest Plan, ANILCA, and TTRA timber-related objectives, and the continued protection of subsistence uses and resources. Impacts on subsistence resources have been minimized throughout the design and location of the individual harvest units, and through the formulation of the alternatives. Reasonable measures to minimize impacts on subsistence have been adopted to the maximum extent practicable while still meeting the purpose and need for this project.

#### **Conclusions and Findings**

The potential foreseeable effects from the action alternatives in the Scratchings project area are not expected to result in a significant restriction of subsistence uses of deer, black bear, furbearers, marine mammals, waterfowl, salmon, other finfish, shellfish or other foods. Based on all available subsistence information, the current level of subsistence harvest can be sustained for any of the alternatives for deer, black bear, furbearers, marine mammals, waterfowl, salmon, other finfish, shellfish, or other foods.

The Forest Plan (1997) concluded that the potential cumulative effects of implementation of the Forest Plan could lead to a significant possibility of a significant restriction to subsistence use of deer some time in the future in some areas of the Tongass due to the potential effects of projects on the abundance and distribution of these resources, and on competition for these resources (Forest Plan Record of Decision p. 24 and Forest Plan p.3-225). However, the analysis was based on an assumed 18 percent increase in community population growth for each of the first two decades and a 15 percent increase for each of the next three decades (Forest Plan FEIS Part 2, p. 3-528, USDA Forest Service 1997b). Populations in Southeast Alaska have actually declined an average of three percent between 1995 and 2003.



## SCENERY

This section provides a summary of the scenery resources in the project area. Scenery is an important aesthetic quality of Tongass National Forest lands. The Forest Plan recognized this and addressed the degree of acceptable alteration of the landscape by assigning Visual Quality Objectives (VQO) to each land use designation. These objectives are based on the visibility of the landscape from identified Visual Priority Routes and Use Areas listed in Appendix F of the Forest Plan.

The Tongass National Forest Land and Resource Management Plan, 1997 (Forest Plan) provides Forest-wide Standards and Guidelines for Scenery Management. These Standard and Guidelines were established to meet the direction in the National Forest Management Act of 1976. The Forest Plan includes the adoption of VQO's, which provide further direction and guidance for managing long-term desired future visual conditions of forest resources. Visual Quality guidance is provided using USDA Forest Service Handbook series 434, 462, 478, 483, 484, 559, 608, 617, 666 and R10 Forest Service Handbook 2309.22 for Scenery Management Guidance.

Scenery resources in the project area have been analyzed using GIS, aerial photos, Visual Nature Studio II simulation software and field reconnaissance. Proposed harvest units were field reviewed by a landscape architect. Field review was conducted in order to determine the effects of management to scenery resources. Specific attention was given to areas seen from Visual Priority Travel Routes and Use Areas as well as areas designated as Not Seen.

The adopted Tongass National Forest NEPA Scenery Template was used to direct the inventory and analysis of visual affects on forest scenic resources within the project area. This template included the analysis and inventory of:

- Visual Character Types
- Variety Classes
- Visual Priority Travel Routes and Use Areas (VPR) as identified in the Forest Plan
- Key Viewing Points
- Existing Visual Condition (EVC) Types I –VI.
- Visual Absorption Capability (VAC)
- Visual Quality Objectives (VQO)

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#### Visual Character Types

While an infinite number of personal interpretations of scenery exist, the Forest Plan assumes general preferences based on cultural norms and predominant social values. The quality of the scenic environment can be categorized in terms of visual character types.

Suemez Island is one of a large and varied cluster of islands located off the west coast of Prince of Wales Island. The island is part of the Coastal Hill Visual Character type that includes these landforms. This visual character type consists of blocks of high mountains 3-20 miles across, separated by flat-floored, u-shaped valleys and deep fiords or straits ½ to 10 miles wide. Landforms include closely spaced mountainous islands and peninsulas 1,000-4,500 feet in elevation. Mountains less than 3,500 feet elevation were over-ridden by glaciers in the past and have rounded hummocky summits, knobs and ridges. Higher mountains are sometimes sharp crested. Landform variety is plentiful, including a great variety of island forms of all sizes. Generally steep landforms to saltwater and an irregular rounded appearance are characteristic of this visual type.

#### Visual Priority Travel Routes and Use Areas (VPR)

Forest Plan standards and guidelines include the designation of Visual Priority Areas, such as Travel Routes and Use Areas. These areas are key to the analysis process and are included in this scenery report. There are eight Visual Priority Routes and Use Areas in the vicinity of the project area as shown:

**Table 3V-1. Visual Priority Routes**

Visual Priority Routes	Locations
Small boat routes	• West Coast Waterway: Ulloa Channel to Hydaburg
Saltwater use areas	• Port Refugio • Buccareli Bay
Communities	• Craig
Private resorts	• Waterfall Resort site & Ulloa Channel north and south of resort
Boat anchorages	• Port Santa Cruz • Port Dolores • Port Refugio

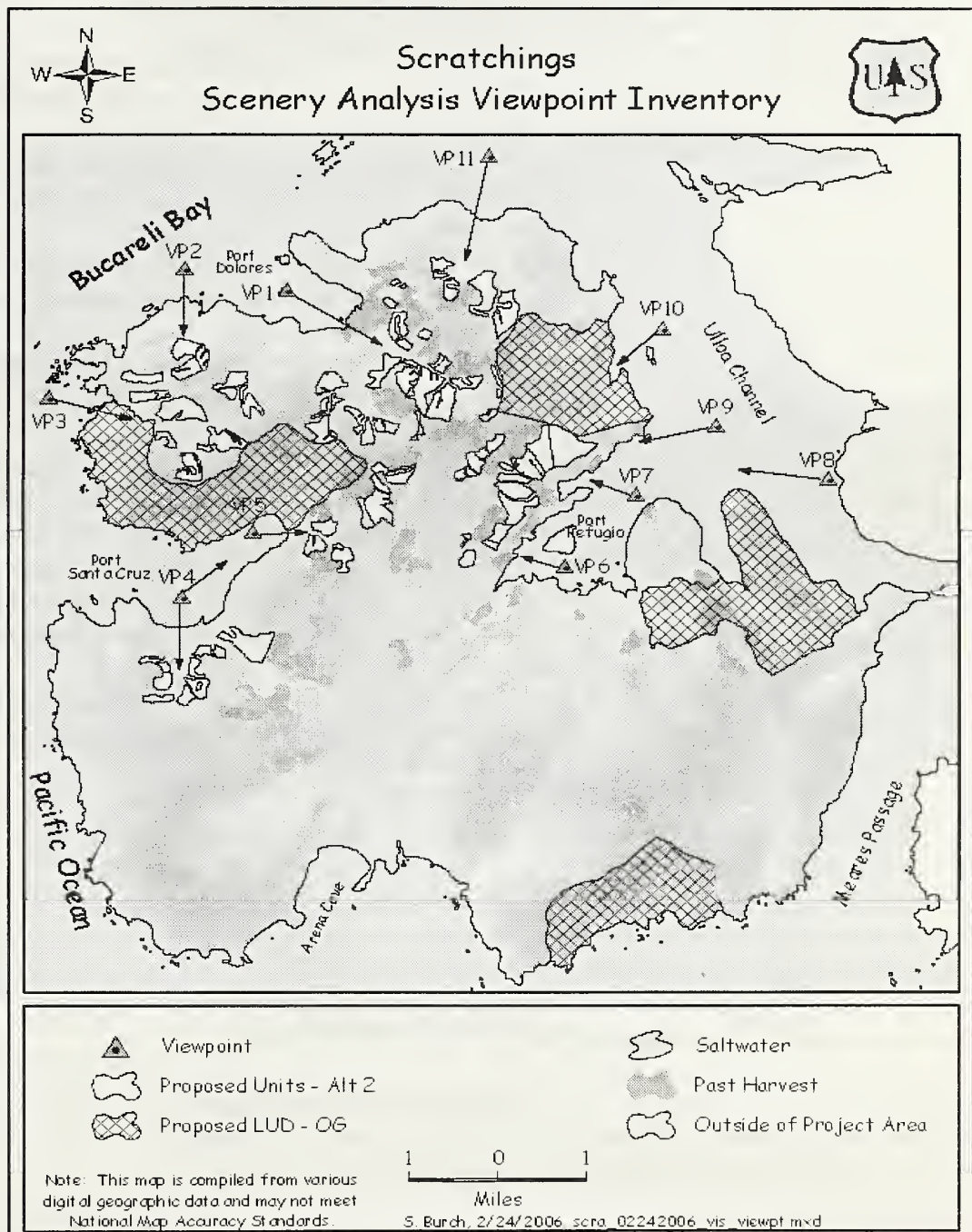
**Table 3V-2. Visibility from Visual Priority Travel Routes or Use Areas**

Priority	Acres
Seen	22,856
Not seen	14,271
<b>Total Project Acres</b>	<b>37,127</b>

### Key Viewing Points

This map illustrates key viewing points used to assess the existing visual condition of the project area and to develop project designs that would be consistent with the adopted visual objectives for each LUD. The View Points are designated 1 through 11 and were established during seen area field reconnaissance. The location of each view point is within a Visual Priority Route or Use Area as designated in the Forest Plan.

**Figure 3V-1. Scenery Analysis Viewpoint Inventory**





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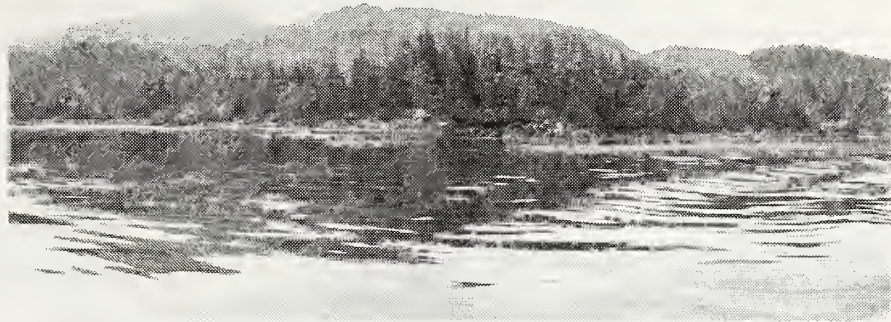
#### **Existing Visual Condition (EVC)**

Existing Visual Condition (EVC) describes the visual appearance of the landscape at the time the project area scenery assessment is conducted. The EVC excludes the context of whether the landscape is seen or not seen from Visual Priority Travel Routes and Use Areas, and indicates the amount of change that has occurred in the past, and what level of change may be acceptable in the future. The relevance of EVC for this analysis is to use the present visual condition of the project area as a baseline to evaluate the acceptable desired future condition and cumulative effects outlined in the Forest Plan management prescription criteria.

Six levels of the landscapes visual condition are outlined. These levels are used to describe the existing landscape ranging from pristine to intensively modified as follows:

1. **Type I :** Landscapes where only ecological change has occurred, except for trails needed for access. Landscapes appear to be untouched by human activities (See Figure 3V-2).
2. **Type II :** Landscapes where change is not noticed by the average forest visitor unless pointed out. These landscapes have been altered but changes are not perceptible.
3. **Type III:** Landscapes where changes are noticeable by the average forest visitor, but they do not attract attention. Changes appear to be minor disturbances.
4. **Type IV:** Landscapes where changes are easily noticed by the average forest visitor and may attract attention. Changes appear as disturbances but resemble natural patterns in the landscape.
5. **Type V:** Landscapes where changes are very noticeable and would be obvious to the average forest visitor. Changes tend to stand out, dominating the view of the landscape, but are shaped to resemble natural patterns (See Figure 3V-3).
6. **Type VI:** Landscapes where changes are in glaring contrast to the landscape's natural appearance. Changes appear as dramatic, large scale disturbances.

**Figure 3V-2. Example Type I EVC from View Point 2**



**Figure 3V-3. Example Type V EVC from View Point 1**



**Table 3V-3. Project Area Acres by Existing Visual Condition**

Existing Visual Condition	Acres
Type I	33,630
Type II	2,038
Type III	129
Type IV	342
Type V	989
<b>Scratchings Project Acres</b>	<b>37,127</b>

### **Visual Quality Objectives**

Forest-wide Scenery standards and guidelines include Visual Quality Objectives (VQO). VQOs are measurable goals used for the

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management of visual resources. They vary by land use designation and apply to any activity that could affect the visual character of the landscape. VQOs are determined based on a variety of physical and sociological parameters including Distance Zone, which is used to determine the distance between the Visual Priority Travel Route and Use Area, and the managed activity. The Forest Plan defines four distance zones used in the application of VQOs:

- **Foreground** - located less than 1/4 mile from the viewer
- **Middleground** – located between 1/4 mile and 3 to 5 miles from the viewer
- **Background** – located from 3 to 5 miles to infinity
- **Not Seen** – located in areas not seen from Visual Priority Travel Routes and Use Areas

The following are the four visual quality objectives within the project area.

#### **Retention VQO**

“Design activities to not be visually evident to the casual observer” (Forest Plan, p 4-76). This VQO applies to the Old-growth Land Use Designation. Activities may only repeat form, line, color and texture that are frequently found in the characteristic landscape. Changes in their qualities of size, amount, intensity, direction, pattern, etc. should not be evident.

#### **Partial Retention VQO**

Provides for management activities to remain visually subordinate to the characteristic landscape. Activities may repeat form, line, color or texture common to the characteristic landscape. Changes in qualities of size, amount, intensity, direction, pattern, etc. remain visually subordinate to the characteristic landscape. Mitigating measures should be accomplished within one year of project completion.

#### **Modification VQO**

Management activities may visually dominate the characteristic landscape. Activities of vegetative and landform alteration must borrow from naturally established form, line, color, or texture so completely and at such a scale that visual characteristics are those of natural occurrences within the surrounding area or character type.

#### **Maximum Modification VQO**

Management activities of vegetative and landform alternations may dominate the characteristic landscape. Management activities appear as natural occurrences within the landscape when viewed as background.



**Table 3V-4. Project Area Acres by Adopted Visual Quality Objectives**

<b>VQO</b>	<b>TM &amp; ML</b>	<b>OG &amp; SA</b>	<b>NNF</b>	<b>Total Acres</b>
Retention		3,068		3,068
Partial Retention	2,734	5,453		8,187
Modification	6,307	4,024	1,167	11,497
Maximum Modification	11,815	2,560		14,375
<b>Total Project Acres</b>	<b>20,856</b>	<b>15,105</b>	<b>1,167</b>	<b>37,127</b>

TM = Timber Production, ML = Modified Landscape, OG = Old-growth Habitat, SA = Special Interest Area, NNF = non-National Forest

## **ENVIRONMENTAL CONSEQUENCES**

The future visual condition of the affected landscape within the project area is primarily represented by the Timber Production and Modified Landscape LUDs. The primary goal of these two designations is to manage land for a sustained long-term yield of timber along with a mix of resource activities while minimizing the visibility of development in the foreground within the Modified Landscape LUD.

The project area also includes Old Growth Habitat and Special Interest Area LUDs. However, no management activities are planned in Old Growth or Special Interest LUDs. Scenery will not be affected within those areas.

Visual effects caused by the proposed alternatives would create a higher degree of alteration to the natural appearing landscape. Factors that would contribute to the magnitude of visual impact associated with each alternative are:

- The location from where development is visible.
- The distance at which it is observed.
- The vegetative composition of the surrounding landscape.
- The design and implementation of the timber management activity.

Each of the proposed alternatives would result in varying degrees of visual change to the existing landscape. All action alternatives would meet or achieve a higher degree of visual quality than the Forest Plan's Adopted Visual Quality Objectives within the project area.

## **Direct Effects of Timber Harvest and Summary of Effects by Alternative**

Alternative 2 would produce the most visible change to the existing

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landscape with a resultant effect of 8 percent total visual disturbance. Alternatives 3 would produce 7 percent, while alternatives 4 and 5 being similar in effect will produce approximately 6 percent total visible disturbance.

**Table 3V-5. Visibility of Proposed Harvest by Alternative**

Distance Zone	Alternatives			
	2	3	4	5
Foreground	43	31	31	26
Middleground	997	695	622	483
Background				
Not Seen	526	298	256	275
Total Proposed Harvest Acres	1,566	1,024	909	784

#### Direct/Indirect Effects

##### Alternative 1

Under Alternative 1 no timber harvest or road building would take place. No visual disturbance would occur as a result of management activities. This alternative would maintain the existing visual character of the landscape.

#### Cumulative Effects

##### Alternative 1

Existing past harvest areas would continue to regenerate; recently harvested units and older harvested areas would continue to establish mature forest texture.

#### Direct/Indirect Effects

##### Alternative 2

Alternative 2 would harvest the greatest number of acres seen from Visual Priority Travel Routes and Use Areas. The most distinct change would occur from View Point 3 in Bucareli Bay toward Units 634-030 and 643-032 where VQOs are Maximum Modification. This area has no visual evidence of past harvest and remains in a natural unaltered condition. Effects from this alternative would be obvious to the casual observer and would meet VQO Maximum Modification.

Harvest effects as seen from Waterfall Resort in Units 635-012, 635-013, 635-015, and 635-016 would be seen and would meet Modification VQO.

Existing and proposed roads were analyzed. Harvest prescriptions and unit designs included visual mitigation for roads where needed in order to meet VQOs for each unit. All proposed units in Alternative 2 would meet their designated Visual Quality Objectives.

### **Alternative 3**

Visual impacts as they relate to Alternative 3 are similar to those found in Alternative 2 except the northwest units in Timber Production LUD would be dropped in this alternative including those seen from View Point 3 in Bucareli Bay toward Units 634-030 and 634-032. Scenery would not be affected in this area and the visual condition would maintain its natural characteristics. All harvest prescriptions and road layouts in Alternative 3 would meet Visual Quality Objectives for each unit.

### **Alternative 4**

Affects of alternative 4 would be less evident than those found in alternative 3. The northwest units and units adjacent to Port Santa Cruz in Timber Production LUD would be dropped. Scenery would not be affected in this area and the landscape would maintain its existing characteristics. Effects of past harvest would continue to regenerate toward old-growth characteristics. The harvest prescription and road layouts were accounted for to insure each unit and all units collectively will meet designated Visual Quality Objectives.

### **Alternative 5**

Affects of this alternative would be similar to those found in alternative 4. All western units and those seen from Port Santa Cruz in Timber Production LUD would be dropped. The landscape would maintain its natural characteristics and continue to regenerate towards old-growth characteristics. Visual impacts from past and potential roads were accounted for in areas where timber management would occur. Harvest prescriptions were developed to meet Visual Quality Objectives.

## **Cumulative Effects of Alternatives 2 through 5**

### **Allowable Visual Disturbance**

Management activities (usually timber harvest) that do not meet Visual Quality Objectives are considered to have negative impacts or exceed allowable limits of change to the visual condition. A visual criterion denoted by the term “Percent Allowable Visual Disturbance” addresses how much allowable visual disturbance can occur in a given area during a specific time period. Proposed management activities within the project area may occur adjacent to or near previously harvested locations. However, even though individual harvest units



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may meet a particular Visual Quality Objective a greater impact may cumulatively result.

Evidence of past harvest visible from VPR's comprises approximately four percent of the project area. The largest percent of cumulative visual disturbance is Alternative 2 with approximately eight percent total disturbance. This is well within maximum disturbance thresholds of 50 percent for units in Timber Production and 25 percent for units in Modified Landscape. The overall effect on scenery from any of the proposed alternatives is well within the allowable limits of change to the landscape as designated in Forest Plan Standard and Guidelines and would meet or exceed adopted Visual Quality Objective within the project area.

#### Conclusion of Effects

In each alternative a percentage of harvest units will be visible or discernible from sensitive viewpoints, as seen from major Visual Priority Travel Routes and Use Areas. Potential views of timber harvest activity from Waterfall Resort will be seen and will meet adopted Visual Quality Objective modification. All action alternatives will either meet or exceed a higher level of visual quality than the Adopted Visual Quality Objective for those areas within the project boundary as designated in the Tongass Land and Resource Management Plan.

**Table 3V-6. Percent Allowable Visual Disturbance of Past and Proposed Harvest by Alternative**

	Existing Condition/	Total Past & Proposed Harvest by Alternative			
	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
<b>Total Project Acres</b>	1,460	3,025	2,483	2,219	2,243
<b>Total Project Area Disturbance</b>	4%	8%	7%	6%	6%

## *Simulations of Effects*

The following are examples of simulations illustrating proposed effects of timber harvest activities from key viewing points within the project area.

**Figure 3V-4. Existing View From Waterfall Resort (VP 8)**



**Figure 3V-5. Simulation illustrating view from Waterfall Resort after proposed harvest in Alternatives 2, 3, 4, and 5**





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**Figure 3V-6. Existing View from Port Santa Cruz (VP4)**



**Figure 3V-7. Simulation illustrating view from Port Santa Cruz (VP 8) after proposed harvest in Alternatives 2 and 3.**





## Recreation

This section provides a summary of the recreation resource in the project area. The Forest-wide standards and guidelines for recreation are on pages 4-35 through 4-52 of the Forest Plan.

The Interdisciplinary Team (IDT) identified three key indicators to measure the effects of the Scratchings timber sale project alternatives on the recreation resource:

1. Recreation Opportunity Spectrum (ROS) and Setting Indicators
2. Recreation Places and Recreation Sites
3. Recreation Development Opportunities

## Affected Environment

Suemez Island is a remote island approximately 15 miles southwest of the City of Craig. Veined with a system of existing roads, Suemez Island recreation is primarily linked to this road system. Hunting is one of the major recreation activities on the island, where hunters tend to bring off-highway vehicles (OHVs) on boats and access prime hunting locations from the road system. Other more dispersed recreation opportunities also take place on Suemez Island, such as beach combing, hiking and spelunking. Visitors who participate in these activities tend to anchor their boats and access the sites by bushwhacking through the dense vegetation. Large numbers of visitors come to commemorate the first Catholic Mass in Alaska on the beach in Port Santa Cruz. More than 100 people have been known to participate in this event. Although this event accounts for the most recreation users on Suemez Island, they do not have the picnic every year and their use is concentrated on a small beach area away from the proposed timber harvest activities.

The desired condition for recreation on Suemez Island is to provide recreation access to the southern beaches like Arena Cove. Community members have shown an interest in the development of a hiking trail from Port Refugio to Arena Cove. Other desired conditions emphasize the roaded recreation opportunities on the island.

## Recreation Opportunity Spectrum (ROS)

The process used to classify recreation opportunities on National Forest System Lands is the Recreation Opportunity Spectrum (ROS). The ROS process is not a land management system, but rather a method used to inventory an area's potential recreation opportunities. This system can be used to evaluate the changes that can occur in a given area because of different management prescriptions. The USDA Forest Service has developed the ROS system to help identify, quantify, and describe the variety of recreational settings available in National Forests (Forest Plan pp. 4-46 – 4-52).

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The ROS class designations are as follows:

1. Primitive
2. Semi-primitive Non-motorized
3. Semi-primitive Motorized
4. Roaded Natural
5. Roaded Modified
6. Rural
7. Urban

The following table shows the number of acres in each ROS class for the Scratchings project area (Suemez Island).

**Table 3R-1. Existing ROS Class condition for Suemez Island.**

ROS Class	Acres
Primitive (P)	6,982
Semi-primitive non-motorized (SPNM)	13,188
Semi-primitive motorized (SPM)	2,464
Roaded Modified (RM)	14,476

Roaded Modified ROS makes up the largest ROS class on the island. Hence, the majority of the land area is managed for roaded recreation and maximum modification of the landscape. This ROS class is appropriate for areas in which timber harvest activities occur.

#### **Recreation Places and Recreation Sites**

**Recreation Places** are geographic areas having one or more physical characteristics attractive to people engaging in outdoor recreation activities. They may be beaches, streamside or roadside areas, trail corridors, or hunting areas within the immediate area surrounding a lake, cabin site, or campground. Furthermore, these are places identified as those where recreation has occurred or has obvious potential to occur.

The existing recreation places on Suemez Island tend to be associated with the safe harbor areas, the road system, the outer island beaches, and the geological sites. The Forest Service road system provides access to much of Suemez Island.

A **Recreation Site** is a specific location where a particular activity is known to occur, or is well suited for an activity to occur in the future (the sites are identified as existing or potential). Examples of recreation sites include a campsite, an anchorage, a public use cabin, a viewpoint, or a known hunting area. Recreation sites in the Craig Ranger District are recorded in the Ketchikan Geographic Information System (GIS) recreation sites layer.

No Forest Service inventoried recreation sites currently exist on Suemez Island. The current road system provides access to the northern and central portions of Suemez Island. This access provides opportunities for hunting, hiking, OHV riding and berry picking. Visitors may also leave the road system and beach comb, and investigate unique geological areas.

### **Recreation Development Opportunities**

Potential recreation developments include a trail from Port Refugio to Arena Cove. This trail would be designed as a Level II trail, which means that it would be a simple natural tread trail, with few developments beyond blazes and water control devices. A natural tread trail currently exists within the special interest area on Suemez Island. None of this locally made path is near any of the project units or roads. A Forest Service trail between Port Refugio and Arena Cove has been identified by Craig residents as a recreation opportunity that they would like to see developed and maintained. The purpose of developing this trail would be to provide hiking access from the Suemez LTF to the outer island beaches for beach combers and tide watchers. To date, no planning or design work has taken place on this proposed trail project, although it has been identified in the Draft Prince of Wales Recreation Master Plan.

The ROS class for the potential trail corridor would be Roaded Modified and SPNM. The Land Use Designations (LUDs) allocated for this area would be Modified Landscape and Special Interest Area. The construction of a primitive, Level II trail would be consistent with all of these classifications and designations.

### **Environmental Consequences**

For each alternative, an analysis of the ROS classification and harvest acres are documented. ROS is a management tool used to determine the level of recreation development appropriate in specific recreation settings. It is based on existing land uses. Changes to the land use, for example, harvesting timber in an area that was formerly un-harvested, would result in a change to the existing land use. The existing ROS would change to reflect the changed recreation setting. Table 3R-2 shows the proposed harvest acres within each ROS class as they relate to action Alternatives 2, 3, 4 and 5.



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**Table 3R-2. The proposed timber harvest acres in each ROS class for the alternatives.**

ROS Class	Alt. 2	Alt. 3	Alt. 4	Alt. 5
SPNM	594	76	14	13
SPM	31	31	31	0
RM	941	917	715	771

The SPNM setting is not compatible ROS class for areas with timber harvest, so the ROS class for these areas would change to reflect the new setting. ROS is not a management system, so it does not dictate what type of activities are permitted, rather it provides guidelines about the types of recreation opportunities that are compatible with the management activities in an area. The LUD in the Forest Plan, along with federal, state and local laws and regulations are the managing systems for the National Forest System lands. The proposed harvest activities occur in timber harvest and modified landscape LUDs for this project, and the Forest Plan recognizes that management activities may change the recreation setting in these LUDs. Thus, the SPNM classification would change to RM to correspond to the types of activities that are compatible with timber harvest and modified landscape LUDs. Some acres may return to SPNM ROS following road closure and storage proposed for Alternatives 3-5. In each alternative road miles would be taken out of use by vehicle and OHV traffic (see Transportation section, this chapter for more details).

The ROS character of several acres would change as a result of the proposed timber harvest activities. On the Tongass National Forest, ROS is a description given to existing conditions. It is not a prescription for management of these areas unless specifically determined by an additional planning document. Therefore, if the LUD allows for increased development, timber harvest or increased recreation use, then the descriptive ROS character may change to show the new development. Since expanded development is allowed on Suemez Island, based on the area LUDs, a change in recreation opportunity character is allowed as a management objective of the existing plan. Based on observations of recreation on Suemez Island and the lack of documented user conflicts, a change in the ROS for a portion of the island is not likely to greatly impact Suemez Island's recreation users. Furthermore, some changes to existing ROS character were anticipated as part of the management objectives and direction incorporated in the Forest Plan.

## **Direct and Indirect Effects**

### **Alternative 1**

No effects to the recreation resource are anticipated if the no action alternative is selected. No changes to the road system or the ROS classifications occur.

### **Alternatives 2, 3, 4, and 5**

Dispersed recreation is expected to continue in the project area. With the proposed timber harvest and other activities, recreation opportunities are expected to remain much the same throughout the project area. Limited effects are expected to occur to the recreation places. Since no recreation sites are identified on Suemez Island, there would be no effects. Some recreation sites exist in the bays for off shore anchorages, but it is unlikely that the timber harvest activities will affect these sites. Reclassification of ROS class SPNM to RM in new timber harvest units that are consistent with LUD direction would have to take place. The largest change would be in Alternative 2, with an increase of 594 acres of RM from SPNM. Since no developed recreation sites exist and no developments are planned near these areas, the change in ROS acres is not anticipated to affect recreation uses.

Recreation opportunities would not be negatively affected by any alternatives. None of the units are in conflict with the recreation opportunities or potential developments.

An ultimate decrease in roads open to OHV travel, following closure and decommission of roads in Alternatives 3-5 may have a minimal impact on OHV use on Suemez Island. The loss of useable roads (approximately 8 out of 28 miles in Alternatives 3-5) may decrease OHV use on Suemez Island, but more than likely the small number of current OHV users will continue to utilize the post-harvest road system for hunting close to Port Refugio.

### **Carrying Capacity Analysis**

Recreation carrying capacity for Suemez Island has not been analyzed to date. A carrying capacity analysis for all of Craig and Thorne Bay Ranger Districts has been initiated as part of a needs assessment for outfitter and guide use in wilderness areas. Although this carrying capacity analysis is looking at all areas of Prince of Wales Island, it is not likely to concentrate on Suemez Island for two reasons: 1) there is no evidence of recreation related impacts or conflicts and 2) there are no outfitters and guides using Suemez Island.

The carrying capacity concept for recreation has been incorporated into the management of wilderness areas, national parks and special recreation areas that receive high levels of use, have evidence of

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recreation related impacts and/or conflicts between users or user groups (Manning 2001). In these areas, management objectives for the area are outlined in legislation and landowner policy, but narrower more site-specific guidance and management may be required to protect the resource and the visitor experience. The objectives for recreation management on Suemez Island, based on the Land Use Designations (LUD), are as follows: Timber Harvest and Modified Landscape LUD - 150 overnight guests at an overnight facility, 1000 guests at a day use facility; flightseeing facility development and trails are all appropriate recreation uses in these areas. All of the proposed timber harvest and road development would occur in these LUDs or in the Old Growth Reserve LUD which allows for 24 overnight visitors, 50 visitors to a day use sight at one time, and development of most recreation facilities except campgrounds (Forest Plan 1997, pg. 4-40). Hence, since the current recreation use, estimated at fewer than 200 people in the last five years (less than 20 visitors were observed by Forest Service employees in 2006) far from exceeds the objectives for the LUD, there is no reason to analyze the capacity or limit use, or types of use.

#### **Visitor Conflict or Displacement**

Concern was raised in comments on the Draft EIS about the displacement of non-motorized recreation users on Suemez Island. Most non-motorized users seek out the caves, beaches or geological features on Suemez Island, most of which are located in the Special Interest Area. Since no road construction or timber harvest would take place in the Special Interest Area LUD, it is not anticipated that conflicts between motorized and non-motorized recreation users will occur. Displacement of visitors is not likely, due to the small numbers of users of any type, and because the LUD management direction provides for a diversity of recreation opportunities on Suemez Island. Visitors would continue to be able to visit the Special Interest Area on southern end of Suemez Island and be away from roads and development. On the other hand, most of the observed recreation use of Suemez Island is roaded recreation. Visitors come to ride OHVs, hunt from the road system, walk on the secluded roads or ride bicycles on the roads. Few visitors have been encountered off the road system or outside the bays.

#### **Cumulative Effects**

The cumulative effects analysis area for recreation resources is Suemez Island. The Scratchings timber sale would take place on an island, which separates it from cumulative effects from surrounding areas. Activities in other areas would have no effect on the Suemez Island recreation opportunities.



### **Alternative 1**

The cumulative effects area for recreation resources is Suemez Island. No cumulative effects are anticipated with Alternative 1.

### **Alternatives 2, 3, 4, and 5**

The Scratchings timber sale is not the first timber harvest on Suemez Island. The additional acres of timber harvest would have some cumulative effect on recreation, mostly in terms of the visuals associated with the recreation opportunity. Overall the miles of roads open to vehicle and OHV use would decline slightly. This may have a minor effect on the motorized recreation on the Island, however, based on the low amount of use, the decrease in open road miles is not expected to impact users. Since much of the island is protected by a Special Interest Area LUD, where timber harvest activities are not permitted or are strictly limited, primitive recreation opportunities are protected. The cumulative effects of this project and former timber harvests are not likely to affect recreation opportunities on Suemez Island.

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### **Heritage Resources**

Consideration of the effects of the project on heritage resources in the “area of potential effects” is a process defined by the National Historic Preservation Act (1966 as amended). The process consists of (1) defining the area of potential effects, (2) conducting a review of existing historic and archaeological information about the project area including the results of past heritage surveys, and through consultations with affected tribes and groups, (3) implementation of any additional fieldwork deemed necessary to assess potential effects, (4) development of recommendations based on the results of 1, 2, and 3, and (5) consultation with the State Historic Preservation Officer (SHPO) to achieve concurrence with recommendations regarding significance and effect.

#### **Area of Potential Effect**

The area of potential effects for the Scratchings EIS is considered to be Suemez Island. Direct effects are limited to the areas of new harvest and road construction. Indirect effects apply to the entire island, but are considered to be negligible given the existing level of use of the island. Cumulative effects are seen as applying to the entire island, but are again considered to be minimal.

#### **Past and Current Archaeological Survey on Suemez Island**

Heritage resource investigations on Suemez Island were conducted first by Sealaska Corporation in 1975 (Wilsey and Ham 1975) as they prepared applications for historic and cemetery sites throughout Southeast Alaska under Section 14(h)(1) of ANCSA. Since 1975 the Forest Service has conducted cultural resource surveys in support of proposed management activities on Suemez Island.

Archaeological surveys were conducted in 1977 of proposed Log Transfer Facilities (LTFs) at Bocas Bay, Port Refugio, and a small cove east of Point Arucenas. Forest Service Archaeologist, Chris Rabich Campbell conducted shoreline surveys in Port Refugio for a proposed Forest Service work camp and LTF, along Meares Passage for an LTF, in and around Port Dolores, Port Santa Cruz, and along the shores of Cape Felix (USDA Forest Service files 1979, 1980, 1982, and 1984). Portions of the Suemez Island shoreline were examined as part of an Earthwatch project under the direction of Steve Langdon, aimed at locating and recording intertidal fish and water control features (USDA Forest Service files 1986). In 1989 and 1990, Forest Service archaeologist, Warren Hurley surveyed 266 acres within proposed timber harvest units and 8.5 miles of road corridors for the Santa Cruz and Refugio timber sales (Hurley 1990). In 1994 and 1996 Erlandson visited Suemez Island to collect obsidian samples for testing

(Moss and Erlandson 2000:4). In 1998, Forest Service archaeologists Flynn and Borg conducted pedestrian survey of 12 acres in the vicinity of Port Refugio for a planned salvage timber harvest along the interior road system (Fifield 1998).

In support of the current project Fifield and Watkins surveyed portions of the shoreline in Port Santa Cruz in 2000. In addition to pedestrian survey several test pits were excavated at Rio de la Cruz, the purported site of Alaska's first Catholic Mass in 1779. No cultural resources were located. The crew also had no success locating an obsidian source in the area.

In 2001, further survey was done by Forest Service archaeologists and volunteers in Port Santa Cruz in an attempt to locate sites and an obsidian source in the area. The crews were successful in locating one occurrence of bedrock obsidian. They were unsuccessful at discovering sites referenced in Spanish journals.

In June 2003 Terry Fifield and Steve Langdon led a group of volunteers in a project aimed at following the 1779 Spanish route of exploration in Bucareli Bay. The group spent June 18 and 19 in Port Santa Cruz on Suemez Island attempting to locate evidence of the Spanish and/or Native presence. Two additional test pits were excavated in an effort to discover the original site of the Spanish cross, infirmary, and crew burial. Again, these attempts were unsuccessful. Abundant evidence of modern use was located. However, no evidence of archaeological or historic use was discovered.

The Craig Ranger District maintains a program of regular monitoring of historic and archaeological sites. Sites are visited to track changes caused by natural and cultural factors and to periodically add to existing site and photo records.

### **Tribal Consultation**

Consultations have been and continue to be conducted with the tribal governments and Native corporations of Craig, Klawock, and Hydaburg.

The Craig District Ranger or acting District Ranger attended tribal council meetings on Prince of Wales Island in October 2005 to highlight high interest projects on the Craig and Thorne Bay Ranger Districts and to review the 2006 program of work. The Scratchings EIS was highlighted and concerns were solicited.

On September 26, 2006 a meeting was held in Craig between the Tongass National Forest and representatives of the Craig, Klawock,



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and Hydaburg Tribal Councils. The focus of the meeting was the Tongass Forest Plan Adjustment. However, the Scratchings EIS was discussed as well.

During the late winter and spring of 2006 the Prince of Wales Island District Rangers or acting Rangers attended tribal council meetings to highlight the year's active projects. The Scratchings EIS was discussed at each of these meetings. Meetings attended were held February 16, 2006 in Hydaburg, March 14, 2006 in Klawock, and April 10, 2006 in Craig. No comments regarding Scratchings planning were received at these meetings.

Following distribution of the Scratchings Draft EIS in August 2006, additional tribal consultation was conducted. A comment letter was received from the Craig Community Association, which led to modification to the Heritage Resources section of chapter 3 in the Final EIS. Letters presenting the 2007 program of work for the Craig and Thorne Bay Ranger Districts were mailed to tribes in mid December 2006. During January 2007 the Craig District Ranger or acting Ranger attended tribal council meetings in Hydaburg, Klawock, and Craig. The Scratchings EIS was discussed and the timeline for completion explained. No comments were received.

#### **Heritage Resources on Suemez Island**

The analysis of known and potential heritage resources on Suemez Island points to several key issues. Ethnographic uses of the island by Tlingit and Haida people that resulted in creation of recognizable archaeological sites are likely located on the coast. All known sites, including those related in oral history but, as yet not located on the ground, occur in the coastal fringe. Activities inland perhaps were more ephemeral in nature and certainly are more difficult to locate in the present.

The Spanish explorations of Bucareli Bay, and in particular, Suemez Island in 1775 and 1779 are well documented (Olson 2002, Cook 1973, Moore 1972). Crews under the command of Bodega y Quadra spent more than two months in the late spring and early summer of 1779 visiting locales in Port Delores, Port Refugio, and elsewhere while the main body of the expedition was anchored in Port Santa Cruz. Yet, repeated attempts by Forest Service teams to locate physical evidence of the Spanish presence have been unsuccessful. Explanations for the lack of Spanish and Native sites in Port Santa Cruz may include (1) collection, by Native residents, of Spanish material items shortly after Spanish departure; (2) collecting over the past 230 years by the general public; and (3) destruction by winter storms, which routinely batter the shore of west-facing bay.

Obsidian from Suemez Island (locations at both Cape Felix and in Port Santa Cruz) figures prominently in the lithic artifact assemblages at several sites in southeast Alaska and British Columbia dated as early as 10,300 calendar years before present. The implication is that early Southeast Alaskans were quarrying obsidian on Suemez Island and trading it up and down the Northwest Coast. The raw materials from Suemez Island have been matched with artifacts from several sites (Lee 2001, Moss and Erlandson 2001). However, solid evidence of quarrying activity on Suemez Island is yet to be found. Although it is possible that acquisition of obsidian by early traders was opportunistic we must maintain the possibility that a quarry may exist. If it does exist it will likely be in the southwest quadrant of the island. The units planned in Scratchings Alternatives 2 & 3 are in the general area where we would expect such a quarry to exist. Limited archaeological reconnaissance of those units has revealed obsidian in only one location.

### **Effects of Alternatives**

Several factors contribute to low potential for the Scratchings Project to effect heritage resources within the area of potential effects for the project. All known historic and archaeological sites on Suemez Island are located on or near the coast. The factors described in our Programmatic Agreement with SHPO and the Advisory Council for Historic Preservation which contribute to sensitivity for cultural resources are absent from the directly affected portions of the project area (USDA Forest Service 2002). The Forest Plan 1,000-foot coastal buffer effectively removes all harvest activities from this area of highest potential for the occurrence of heritage sites. The majority of planned harvest is on steep slopes at higher elevations; again in low sensitivity areas for heritage resources. Suemez Island receives considerable recreation use at present, principally in Port Refugio, Arena Cove, and Port Santa Cruz. The planned timber harvest will not significantly increase the use of these areas, nor will it contribute to the potential impacts to heritage resources.

### **Direct and Indirect Effects**

#### **Alternative 1**

Alternative 1 (No Action) results in no change in the existing condition. Selection of Alternative 1 would result in no adverse direct, indirect, or cumulative effects on heritage resources.

#### **Alternatives 2 and 3**

Alternatives 2 and 3 contain harvest units on the slopes south of Port Santa Cruz (634-111, 634-073, 634-070, 634-069, 634-068, 634-67,

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634-098). Volcanic ash deposits exposed in a v-notch in this area contain obsidian deposits that are known to be used in the manufacture of stone tools as long as 10,300 years ago. Although a prehistoric quarry site for the obsidian has not been identified and no historic property has been designated, there is the possibility that such a quarry site does exist and remains undiscovered. Mitigation measures are needed to ensure no adverse effect. If these units are selected for harvest, archaeological surveys will be done in conjunction with road and harvest unit layout to identify potential quarry sites. If a significant historic property is located during this survey, road or unit development will cease at that location while a mitigation strategy is developed in consultation with SHPO. The mitigation strategy will depend on the extent and character of the historic property and may range from small scale data recovery to dropping the unit or road. SHPO has concurred with a determination of no adverse affect with the implementation of this mitigation strategy.

#### **Alternatives 4 and 5**

Alternatives 4 and 5 contain no harvest units or roads in high sensitivity areas. No direct or indirect effects are anticipated.

#### **Cumulative Effects**

No cumulative effects are expected to heritage resources from Alternative 1 (no action) or Alternatives 2 through 5 (the action alternatives) because there will be very limited, or no, direct or indirect effects of these alternatives on heritage resources.

SHPO concurred with this determination in a letter dated May 16, 2006.



## Other Environmental Considerations

### Probable Adverse Environmental Effects that Cannot be Avoided

Implementation of any action alternative would result in some adverse environmental effects that cannot be effectively mitigated or avoided if the proposed action or alternatives are to take place. The interdisciplinary procedure used to identify specific harvest units and roads was designed to eliminate or reduce significant adverse consequences. In addition, the application of Forest Plan Standards and Guidelines, Best Management Practices (BMP), mitigation measures, and a monitoring plan are intended to further limit the extent, severity, and duration of these effects. The specific environmental effects of the alternatives were discussed earlier in the chapter, and mitigation measures are described in Chapter 2. Formulation of alternatives includes the avoidance of potentially adverse environmental effects; however, some adverse impacts to the environment which cannot be completely mitigated may occur.

Standards and guidelines, BMPs, and mitigation measures are designed to prevent significant adverse effects to soil and water; however, the potential for adverse impacts does exist. Sediment production would occur while roads are being built and timber is harvested. Some sediment would be produced by surface erosion, channel erosion, and mass movement.

Disturbance, displacement, or loss of fish and wildlife may occur as a consequence of habitat loss and increased human activity in the project area. New road construction and the human activities associated with new access to areas previously unroaded would result in impacts to fish and wildlife. Improved access into areas that previously had limited roads would have similar effects. The proposed activities would temporarily increase competition for subsistence resources.

Naturally occurring windthrow often exposes mineral soil and may contribute to erosion. Logging methods have been found to increase the rate of windthrow near the borders of partial harvest areas. Partial harvest also has the potential to increase the susceptibility of the timber remaining in the units to windthrow, based on landscape position and wind patterns. Windthrow effects could increase the potential for surface erosion, specifically along stream corridors.

Unavoidable adverse effects to scenery resources are the immediate visual changes that occur to the existing landscape. Noticeable differences are expected to take place between naturally occurring landscapes and those managed for timber. Over time these changes

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will become more subtle as managed stands reach a point of maturity. At that time the effects of management blend into more natural occurring forests characteristics. Additional effects will include future harvest in addition to the present visual condition created by past harvest activity. Future harvest activities could have effects to the visual characteristics of the existing landscape and will need to be analyzed in order to determine those effects at that time.

The intensity and duration of these effects depends on the alternative and the mitigation measures applied to protect the resources. Most unavoidable effects are expected to be short-term. Short-term effects usually last less than two to five years. Effects would be managed to comply with established legal limits in all cases, such as maximum time for regeneration. Monitoring procedures and mitigation measures have been planned for those areas which may be affected to reduce these effects. Specific mitigation measures are documented in the unit and road cards (Scratchings project record, and if a decision is made to harvest, in the Record of Decision for units and roads in the decision).

Some localized adverse effects may occur on a recurring, though temporary basis. Road construction; timber harvest; timber hauling; recreation traffic on untreated roads; and the operation of internal combustion engines may cause temporary adverse effects to air quality, for example.

#### **Relationship between Short-term Uses and Long-term Productivity**

All alternatives would come under the mandate of the Multiple Use and Sustained Yield Act of 1960. This act requires the USDA Forest Service to manage Forest System lands for multiple uses including timber; recreation; fish and wildlife; range; and watershed. All renewable resources are to be managed in such a way that they are available for future generations. The harvesting and use of standing timber can be considered a short-term use of a renewable resource. Trees can be reestablished and grown again as a renewable resource if the productivity of the land is not impaired.

Maintaining the productivity of the land is a complex, long-term objective. All alternatives protect the long-term productivity of the project area through the use of specific standards and guidelines, mitigation measures, and BMPs. Long-term productivity could change as a result of various management activities proposed in the alternatives. Timber management activities would have direct, indirect, and cumulative effects on the economic, social, and biological environment.

Soil and water are two key factors in ecosystem productivity, and these resources would be protected in all alternatives to avoid damage that could take many decades to rectify. Sustained yield of timber, wildlife habitat, and other renewable resources all rely on maintaining long-term soil productivity. Quality and quantity of water from the project area may fluctuate as a result of short-term uses, but no long-term effects to the water resource are expected to occur as a result of timber management activities.

Timber harvest is a short-term use of wetland resources. Harvest activities are expected to slightly alter the hydrology of harvested wetlands for several years after harvest. Soil moisture levels are expected to rise slightly following harvest due to the loss of canopy interception. Soil moisture levels are anticipated to return to near pre-harvest levels as second-growth establishes and provides canopy cover across the site. Effects on wetland hydrology may be negligible in areas where partial cutting is utilized.

Harvest activities are expected to disturb soils. These small scale disturbances do not pose negative effects to long-term soil productivity. Due to the thick organic mat covering most mineral soils, surface erosion would be limited to detrimentally displaced areas, roads, windthrow, stream banks and recent landslide tracks. Detrimentially displaced areas within timber harvest units are routinely slashed and seeded shortly after they occur (Best Management Practices 13.14). Slashing the disturbed site provides soil cover, reducing the force of raindrop impact and the length of exposed slope. Grass seeding and fertilizing the area further provides soil cover and organic matter for soil rehabilitation. Full suspension yarding techniques proposed for units with steep slopes would effectively limit soil disturbances.

Timber rotations are normally over a 100-year or longer rotation, depending upon site quality. Harvest has been scheduled to allow the earliest cut stands to mature into merchantable timber before the planned harvest of original stands is complete to ensure adequate production of timber. Mature timber stands would be harvested again on a new rotation after the first rotation is complete. Management of the timber resource on these rotations could affect long-term productivity, depending on the intensity of silvicultural practices. Projected timber rotation lengths are not anticipated to affect long-term productivity. Mitigation measures are planned under all the alternatives to ensure future availability of other renewable resources as well.



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All alternatives would provide the fish and wildlife habitat necessary to contribute to the maintenance of viable, well-distributed populations of existing native and desired non-native vertebrate species. The abundance and diversity of wildlife species depends on the quality, quantity, and distribution of habitat; whether used for breeding, feeding or resting. Management Indicator Species (MIS) are used to represent the habitat requirements of all fish and wildlife species found in the project area. Other species associated with the same habitat would also benefit from managing habitats and populations of indicator species. The alternatives provide standards, guidelines, and mitigation measures for maintaining long-term habitat and species productivity. The alternatives vary in the risk presented to both wildlife habitat and habitat capability.

Opportunities for dispersed recreation use including hiking, camping, and fishing would be maintained and increased for future generations. The setting in which these activities occur varies by alternative. The long-term potential for the project area to provide a spectrum of recreation opportunities would be maintained in all alternatives.

#### **Irreversible Commitments of Resources**

Irreversible commitments are decisions affecting non-renewable resources such as soils, wetlands, unroaded areas, and cultural resources. Such commitments are considered irreversible because the resource has deteriorated to the point that renewal can occur only over a long period of time; at a great expense; or because the resource has been destroyed or removed.

The construction of arterial and collector roads, to provide access to the forest, is an irreversible action because of the time it takes for a constructed road to revert to natural conditions. Irreversible actions also include the associated rock quarries which are developed in conjunction with these roads. Alternative 1 would have no new road construction. Alternatives 2, 3, 4 and 5 would construct roads to harvest units as described in the transportation section of this chapter. Old-growth habitat lost due to logging can be considered an irreversible effect since it is not expected to regain old-growth characteristics for at least 150 years. Alternative 1 would not harvest any old-growth. Alternatives 2, 3, 4, and 5 would harvest old-growth timber as described in the old-growth; wildlife; and timber and vegetation sections of this chapter.

Loss of soil due to erosion and mass failures is an irreversible commitment of resources. The loss of soil resources has been minimized to the extent feasible in all action alternatives by following

Region 10 Soil Quality Standards, incorporating BMPs and applying mitigation measures specified in this document.

Loss of cultural resource sites resulting from accidental damage or vandalism would be an irreversible commitment of resources. Standards and guidelines; survey methodology prior to activities; and mitigation measures specified in this document provide reasonable assurance that no irreversible loss of cultural resources would occur.

### **Irretrievable Commitments**

Irretrievable commitment of natural resources means loss of production or use of resources due to management decisions made in the alternative. This represents loss of opportunities for the period of time the resource cannot be used.

Foregoing timber harvest opportunities at this time in certain areas due to resource concerns or economics may represent an irretrievable commitment of resources because that volume cannot be harvested. The commitment is irretrievable rather than irreversible because future entries could harvest those areas if they are still classified as part of the suitable timber base.

The reduction in the visual quality of an area due to timber harvesting would be an irretrievable commitment of resources. The commitment is irretrievable because viewsheds will typically heal from a visual quality standpoint after about 40 years. Second-growth trees will have the color and height needed so as not to be evident to the casual observer after this time. Alternative 1 would have no irretrievable commitment of visual quality. Alternatives 2, 3, 4, and 5 would irretrievably commit visual resources due to timber harvesting.

### **Possible Conflicts with Plans and Policies of Other Jurisdictions**

The regulations for implementing NEPA require a determination of possible conflicts between the proposed action and the objectives of Federal, State, and local land-use plans, policies and controls for the area. The major land-use regulations of concern are the Coastal Zone Management Act (CZMA), Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA), and the State of Alaska's Forest Practices Act.

### **Specifically Required Disclosures**

The proposed action and the alternatives to the proposed action for the Scratchings Timber Sale project area are consistent with other Federal and State environmental laws and executive orders. These laws and orders have been met to the extent practicable and the effects have been analyzed and documented. Several of the laws and executive

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orders listed in Chapter 1 require project-specific findings or other disclosures and are included here. They apply to all alternatives considered in detail in this DEIS.

#### **Tongass National Forest Land and Resource Management Plan**

All project alternatives fully comply with the Tongass Land and Resource Management Plan (1997, as amended) also known as the Forest Plan. This project incorporates all applicable Forest Plan Standards and Guidelines and management area prescriptions as they apply to the Scratchings Timber Sale project area. This project complies with Forest Plan goals and objectives. All required interagency review and coordination will be accomplished.

#### **R10 Supplement 2400-2002-1**

The Scratchings Timber Sale project fully complies with Alaska Region Supplement 2400-2002-1 to USDA Forest Service Manual 2400. This supplement became effective on May 7, 2002, replacing the Alaska Regional Guide, which was withdrawn on April 16, 2002. Specifically, the Supplement provides direction for the management standards and guidelines for appropriate harvest cutting methods; forest standards; maximum size of created openings (a requirement of the National Forest Management Act discussed below); dispersal and size variation of tree openings; management intensity; utilization standards; sale administration; project monitoring; and competitive bidding and small business.

The Forest Plan complies with all resource integration and management requirements of 36 CFR 219 (219.14 through 219.27). Application of Forest Plan direction for analysis of the Scratchings Timber Sale project area ensures compliance at the project level. The National Forest Management Act limits the size of the harvested openings that may be created based on the forest type. The maximum created opening size allowed is 100 acres for the coastal Alaska western hemlock/Sitka spruce forest type. No proposed harvest units in the Scratchings Timber Sale project area would result in openings greater than 100 acres.

#### **Coastal Zone Management Act**

Under the CZMA, Federal activities that affect any land or water use or any natural resource of a State's coastal zone must be carried out in a manner that is consistent to the maximum extent practicable with the enforceable policies of the State's coastal management plan. The Forest Service made a determination that the Scratchings Timber Sale Project will affect the coastal zone, and will be carried out in a manner



that is consistent to the maximum extent practicable with the enforceable policies of the Alaska Coastal Management Program. The Office of Project Management and Permitting of the Alaska Department of Natural Resources reviewed and concurred with that determination.

### **Alaska National Interest Lands Conservation Act (ANILCA) Evaluations and Findings**

A subsistence analysis was conducted for the alternatives considered in detail, in accordance with ANILCA Section 810. The analysis can be found in the Subsistence section of this chapter. Abundance; distribution; access; and competition for harvested resources in the Scratchings Timber Sale project area indicate that traditional subsistence uses of wildlife; fish and shellfish; marine mammals; other foods; or timber resources would not be significantly restricted as a result of this project.

### **State of Alaska's Forest Practices Act of 1990**

May 11, 1990 a major revision of the 1978 State of Alaska's Forest Practices Act (FPA) was approved. The revised act significantly increases the State's role in providing protection and management for important forest resources on state and private lands. The revised FPA also affects National Forest management through its relationship to the ACMP and the Federal CZMA (see above discussions).

The effect of the revised FPA for National Forest timber operations is two-fold. First, the act clarifies that the revised FPA regulations are the standard which must be used for evaluating timber harvest activities on Federal lands for purposes of determining consistency to the maximum extent practicable with the Alaska Coastal Zone Management Program. Secondly, the act calls for minimum 100-foot buffers on all Class I streams and recognizes that consistency to the maximum extent possible for purposes of the ACMP is attainable in Federal timber harvest activities using specific methodologies which may differ from those required by the revised FPA or its implementing regulations.

The USDA Forest Service has evaluated the alternatives to ensure that the activities and developments affecting the coastal zone are consistent with approved coastal management programs to the maximum extent practicable. The layout of all proposed harvest units comply with the TTRA requirements for stream buffers which exceed the stream buffer requirements in the Alaska FPA.

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#### **USDA Forest Service Transportation; Final Administrative Policy**

The Tongass National Forest has prepared the Scratchings Timber Sale project area Draft EIS to be consistent with the USDA Forest Service Transportation; Final Administrative Policy (Roads Rule).

#### **Endangered Species Act**

None of the action alternatives are anticipated to have a direct, indirect, or cumulative effect on any threatened or endangered species in the Scratchings Timber Sale project area or elsewhere. The National Marine Fisheries Service will be consulted and will be sent a copy of this Draft EIS. Informal consultation with the U.S. Fish and Wildlife Service will be conducted for this project. No terrestrial threatened or endangered species are known to occur within the Scratchings Timber Sale project area. A Biological Assessment was prepared and is in the project record.

#### **Bald Eagle Protection Act**

Management activities are restricted within 330 feet of an eagle nest site by a Memorandum of Understanding (MOU) between the USDA Forest Service and the U.S. Fish and Wildlife Service. None of the action alternatives is anticipated to have a significant direct, indirect, or cumulative effect on any bald eagle habitat. MOU and Forest Plan Standards and Guidelines would be followed if any nests are found that may be affected.

#### **Tongass Timber Reform Act**

Harvest units were designed and located to maintain a minimum 100-foot buffer zone for all Class I streams and Class II streams that flow directly into Class I streams as required in Section 103 of the TTRA. The actual widths of these buffer strips will often be greater than the 100-foot minimum as discussed in Chapter 3 and the road and unit cards in the project record. The design and implementation direction incorporates Best Management Practices (BMPs) for the protection of all stream classes. The timber from this proposed project would provide part of the timber supply to the Tongass National Forest's program to seek to meet market demand if an action alternative is selected.

#### **National Historic Preservation Act (1966 as amended)**

An analysis of the effects of all alternatives on historic properties in the area of potential effects for the Scratching EIS has been conducted. Forest Service site and survey files and the Alaska Heritage Resource Survey were consulted to identify known archaeological and historic sites. Background literature relating to the cultural and natural history

of the region and the project area was reviewed. A sample-based survey within the current project area was conducted. Tribal governments on Prince of Wales Island and within the region were consulted to identify areas of cultural concern.

After analysis of all relevant data a finding of no adverse effect was recommended by Forest Service heritage specialists. Stipulations for mitigation should alternatives 2 or 3 be selected were set forth. The Alaska State Historic Preservation Officer concurred with that recommendation in a letter dated May 16, 2006.

## **Federal Cave Resource Protection Act of 1988**

Areas containing karst have been identified on Suemez Island. Forest Plan Standards and Guidelines would be applied to areas known or suspected to contain karst. No harvest would occur in areas containing karst.

## **Clean Water Act**

The Clean Water Act of 1972 (Public Law 92-500) as amended in 1977 (Public Law 95-217) and 1987 (Public Law 100-4) was established to protect and improve the quality of water resources and maintain their beneficial uses. Section 313 of the Clean Water Act and Executive Order 12088 of January 23, 1987 address Federal agency compliance and consistency with water pollution control mandates. Agencies must be consistent with requirements that apply to "any governmental entity" or private person. Compliance is to be in line with "all Federal, State, interstate, and local requirements, administrative authority, and process and sanctions respecting the control and abatement of water pollution".

The Clean Water Act (Sections 208 and 319) recognized the need for control strategies for nonpoint source pollution. The National Nonpoint Source Policy (December 12, 1984), the USDA Forest Service Nonpoint Strategy (January 29, 1985), and the USDA Nonpoint Source Water Quality Policy (December 5, 1986) provide a protection and improvement emphasis for soil and water resources and water-related beneficial uses. Soil and water conservation practices known as Best Management Practices (BMPs) were recognized as the primary control mechanisms for nonpoint source pollution on National Forest System lands. The Environmental Protection Agency supports this perspective in their guidance, "Nonpoint Source Controls and Water Quality Standards" (August 19, 1987).

The USDA Forest Service must apply Best Management Practices that are consistent with the Alaska Forest Resources and Practices Regulations to achieve Alaska Water Quality Standards. The site-



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specific application of BMPs, with a monitoring and feedback mechanism, is the approved strategy for controlling nonpoint source pollution as defined by Alaska's Nonpoint Source Pollution Control Strategy (October 2000). The State approved the BMPs in the USDA Forest Service's Soil and Water Conservation Handbook (FSH 2509.22, October 1996) as consistent with the Alaska Forest Resources and Practices Regulations in 1997. This handbook is incorporated into the Tongass Land and Resource Management Plan.

A discharge of dredge or fill material from normal silviculture activities such as harvesting for the production of forest products is exempt from Section 404 permitting requirements in waters of the United States, including wetlands (404(f)(1)(A)). Forest roads qualify for this exemption only if they are constructed and maintained in accordance with Best Management Practices (BMP) to assure that flow and circulation patterns and chemical and biological characteristics of the waters are not impaired (404(f)(1)(E)). The BMPs that must be followed are specified in 33 CFR 323.4(a). These specific BMPs have been incorporated into the USDA Forest Service's Soil and Water Conservation Handbook under BMP 12.5.

The design of harvest units and temporary roads for this project is in accordance with standards and guidelines, and direction contained in the Forest Plan; Best Management Practices; and applicable USDA Forest Service manual and handbook direction. Unit and road cards in the Scratchings project record contain specific practices prescribed to prevent or reduce non-point sediment sources. Monitoring and evaluation of the implementation and effectiveness of Forest Plan Standards and Guidelines and Best Management Practices would occur. Project activities are expected to meet all applicable State Water Quality Standards.

All roads, landings, and rock pits for this project would be constructed in accordance with Best Management Practices listed in 33 CFR 323.4(a). All roads, landings and rock pits would be designed to minimum standards to accommodate timber harvesting and silvicultural activities.

#### **Clean Air Act**

Emissions expected from implementation of any of the action alternatives would be of short duration and are not expected to exceed State of Alaska Ambient Air Quality Standards (Alaska Administrative Code, Title 18, Chapter 50).

### **Magnuson-Stevens Fishery Conservation and Management Act**

The Magnuson-Stevens Fishery Conservation Act (1996) requires that all federal agencies consult with the National Marine Fisheries Service (NMFS) when any project “may adversely affect” essential fish habitat. The Forest Service sent a copy of the Draft EIS to the NMFS which formally started the consultation process. The NMFS has reviewed the Draft EIS and provided comments on the findings of the assessment and made five conservation recommendations pertaining to the project in a letter dated August 25, 2006 (see project record for letter). The Forest Service has responded to NMFS with a preliminary letter. The Forest Service has responded to the conservation recommendations made by the NMFS. These responses can be found in the Response to Comments (Appendix B) section of the Final EIS. The original EFH Assessment is included in Chapter 3 in this Final EIS to help the reader better understand the consultation process.

### **Effects on Prime Farm Land, Range Land, and Forest Land**

No prime farm land or range land would be adversely impacted by the action alternatives. Forest land would maintain its long-term productivity.

### **Effects on Civil Rights, Women, and Minorities**

This project would not cause adverse impacts to civil rights, women, or minorities based on the analysis in this Final EIS.

### **Natural or Depletable Resource Requirements and Conservation Potential**

All alternatives considered in detail are designed to conform to applicable laws and regulations pertaining to natural or depletable resources including minerals and energy resources. Regulation of mineral and energy activities on the National Forest, under the U.S. Mining Laws Act of 1872, and the Mineral Leasing Act of 1920, is shared with the Bureau of Land Management (BLM). The demand for access to National Forest System lands for the purpose of mineral and energy exploration and development is expected to increase over time. The action alternatives propose road construction that would increase opportunities for access to the National Forest within the project area. This increased access may result in increased activity with regard to known and potential mineral or energy resource occurrences. The actual potential for increased mineral or energy resource activity in the project area is not known. An accurate estimate cannot be made.

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#### **Executive Order 11593**

Executive Order 11593 directs Federal agencies to provide leadership in preserving, restoring and maintaining the historic and cultural environment of the Nation. The work we accomplished in accordance with Section 106 of the National Historic Preservation Act for the Scratchings Timber Sale project area meets the intent of this Executive Order.

#### **Executive Order 11988**

Executive Order 11988 directs Federal agencies to take action to avoid, long and short-term adverse impacts associated with the occupancy and modification of floodplains to the extent possible. A floodplain is defined as the lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands. This area includes areas subject to one percent or greater flooding in any given year.

Forest Plan Standards and Guidelines for riparian areas exclude most commercial timber harvesting from floodplains. Roads may be constructed in or through floodplains subject to the design requirements of Best Management Practices. Effects on floodplains from project activities are avoided or minimized as much as possible.

#### **Executive Order 11990**

Executive Order 11990 requires Federal agencies to avoid long-term and short-term adverse impacts associated with the destruction or modification of wetlands to the extent possible.

This project avoids impacting wetlands whenever practicable, but it is not feasible to avoid all wetland areas. Effects would be minimized by avoiding the use of wetlands as sites for overburden disposal; avoiding temporary road construction through wetlands whenever practicable; and by decommissioning new temporary roads after timber harvest. BMP implementation to minimize ditching, and providing adequate cross drainage would also help minimize the amount of wetlands affected.

Crossing a wetland area can reduce the overall environmental impacts of a particular road because it facilitates avoidance of steep slopes and alignment of roads perpendicular to stream crossings in certain instances. To reduce any road impacts to the hydrology at these sites, frequent road cross-drains would be constructed. To avoid artificial interception of water by roads, free-draining, coarse-textured rock would be used in road foundations, and installation of an adequate size and number of culverts would be required. Drainage structures would be removed on all temporary roads.



## **Executive Order 12898 (Environmental Justice)**

Executive Order 12898, dated February 11, 1994 established the requirements to address environmental justice concerns within the context to agency operations. Agencies are required to identify and address disproportionately high and adverse human health or environmental effects on minority and low-income communities as part of the National Environmental Policy Act (NEPA) process.

Subsistence use of resources by area residents does not vary significantly by ethnicity. No known subsistence food or material from the project area is used primarily by minorities.

Public scoping was advertised through newspapers. Scoping reports were mailed to Federal, State and local agencies, Tribal representatives; libraries throughout Alaska; and interested individuals. The scoping report was added to the Tongass National Forest website. An open house was available to residents and interested visitors on Prince of Wales Island and advertised through newspapers and posted flyers at post offices and businesses. See the Public Involvement section in Chapter 1.

Implementation of the action alternatives for the Scratchings Timber Sale project area would not cause adverse health, social, or environmental effects that disproportionately impact minority and low-income populations. See also the ANILCA Section 810 findings.

## **Executive Order 12962**

Executive Order 12962 directs Federal agencies to conserve, restore, and enhance aquatic systems to provide for increased recreational fishing opportunities nationwide. This order directs Federal agencies to evaluate effects on aquatic ecosystems and recreational fisheries; develop and encourage partnerships; promote restoration; provide access; and promote awareness of opportunities for recreational fishery resources.

The effects of this project on freshwater and marine resources were evaluated during the analysis. No significant adverse effects to freshwater or marine resources are expected to occur with the application of Forest Plan Standards and Guidelines, including those for riparian areas.

Partnerships continue to be used to leverage Federal project funds to address water quality concerns in areas of the Tongass National Forest, although none have been proposed for recreational fisheries in conjunction with this project.

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#### Executive Order 13007

Executive Order 13007 directs Federal agencies to accommodate access to and ceremonial use of American Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites. One sacred site is known to exist on Suemez Island. This site is not located near any of the project units. Access to this site will not be affected by any timber unit or road development discussed in this EIS.

#### Executive Order 13186

Executive Order 13186 directs Federal agencies to evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern. The sections on Wildlife and Threatened and Endangered Species in this chapter provide information on anticipated effects to selected bird species in the project area. None of the proposed activities are expected to have a measurable negative effect on migratory bird populations, although individuals or small groups and their nests may be affected.

#### Energy Requirements and Conservation Potential of the Alternatives (40 CFR Sec. 1502.16 (e))

##### Fuel Consumption

The implementation of the proposed alternatives would require the expenditure of energy (consumption of fuel). Fuel consumption requirements vary by alternative, and are based on: (1) the volume of timber harvested, (2) the type of harvest system used, (3) the amount of road construction, and (4) sale preparation and administration (Tables 3D-1 and 3D-2). The highest fuel consumption rates are for helicopter logging, log transport, and road construction. Alternative 2 would have the highest average fuel consumption rate due to the large amount of helicopter logging. Alternative 2 would also involve the most fuel consumption because it would harvest the most volume.

**Table 3D-1. Average Fuel Consumption Requirements by Activity<sup>1</sup>**

Activity	Fuel Consumption Rate
Timber Sale Preparation and Administration	1.56 gallons/MBF <sup>2</sup>
Cable Logging	6.0 gallons/ MBF
Shovel Logging	6.0 gallons/ MBF
Helicopter Logging	17.0 gallons/ MBF
Load, Haul, Dump, Tow	8.0 gallons/ MBF
Road Construction	4.000 gallons/mile
Road Maintenance	20 gallons/mile

<sup>1</sup> Source: Dave Fletcher, Tongass Timber Program Manager, 2004.

<sup>2</sup> MBF = thousand board feet

**Table 3D-2. Estimated Fuel Consumption (Thousands of Gallons) by Alternative**

Activity	Alternative				
	1	2	3	4	5
Cable logging	0	105.2	84.9	53.4	71.7
Shovel logging	0	27.2	28.7	20.6	30.6
Helicopter logging	0	244.6	98.9	84.1	51.9
Load, haul, dump, tow	0	291.7	198	138.2	160.9
Road construction	0	75.0	50.0	27.9	37.4
Road maintenance	0	0.4	0.4	0.4	0.4
Timber sale preparation / administration	0	75.0	38.6	26.9	31.4
Total Consumption	0	801.1	499.4	351.5	384.3
Average Rate (gal/MBF)	0	22.0	20.2	20.3	19.1

### Conservation Potential

The use of low tire pressure equipment or central tire inflation (CTI) during road construction and logging has been shown to decrease costs during studies nationwide and on the Tongass National Forest. Studies on Mitkof Island indicate that these measures can reduce costs for rock replacement/road maintenance, log truck fuel, and tire repair and replacement. Some other measures that can be used to reduce fuel consumption include using cable yarding instead of shovel yarding methods, avoiding the use of helicopter yarding where feasible, and minimizing the amount of new road construction.

The use of cable yarding equipment fitted with mechanical or hydraulic interlocks provides the ability to decrease yarding expense as the throttle and brake do not have to be ridden simultaneously to provide deflection for the turn of logs.



### 3 Environment and Effects



Port Refugio log transfer facility (LTF)

# **Chapter 4**

## **References and Lists**

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# Glossary

**Abiotic** - Pertaining to the non-living parts of an ecosystem, such as soil particles, bedrock, air or water.

**Access** - The opportunity to approach, enter and make use of public lands.

**Access Management** - Acquiring rights and developing and maintaining facilities needed by people to get to and move through public lands (physical attributes).

**Active Channel** - As defined for the riparian standards and guidelines; includes stream channels, secondary channels, and braided channels. The unstable portion of a stream channel that frequently changes course.

**Adaptive Management** - A type of natural resource management that implies making decisions as part of an on-going process. Monitoring the results of actions provides information that may indicate the need to change a course of action. Scientific findings and the needs of society may also indicate the need to adapt resource management to new information

**Adfluvial Fish** - Species or populations of fish that do not go to sea, but live in lakes, and enter streams to spawn.

**Aerial Logging** - see Logging Systems

**Affected Environment** - The current conditions of any given area. The resources for the affected environment are analyzed any time a project is proposed.

**Age Class** - One of the intervals into which the age of a range of trees is divided for classification, usually 20 years. A single age class would have trees that are within 20 years of the same age, for example 1-20 years or 21-40 years.

**Alaska Heritage Resource Survey (AHRS)** - The official list of cultural resources in the State of Alaska, maintained by the Office of History and Archaeology, Alaska Division of Parks and Outdoor Recreation.

**Alaska National Interest Lands Conservation Act (ANILCA)** - Passed by Congress in 1980, this legislation designated 14 National Forest wilderness areas in Southeast Alaska. The Alaska National Interest Lands Conservation Act of December 2, 1980. Public Law 96-487, 96th Congress, 94 Stat. 2371-2551. Section 810 requires evaluations of subsistence impacts before changing the use of these lands.

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**Alaska Native Claims Settlement Act (ANCSA)** - Public Law 92-203, 92nd Congress, 85 Stat. 2371-2551. Approved December 18, 1971, ANCSA provides for the settlement of certain land claims of Alaska natives and for other purposes.

**Allowable Sale Quantity (ASQ)** - The quantity of timber that may be sold from an area covered by a forest plan during a time period specified by the plan.

**Alluvial Fan** - A cone-shaped deposit of organic and mineral material made by a stream where it runs out onto a level plain or meets a slower stream.

**Alluvium** - All sediment deposits resulting directly or indirectly from sediment transport within streams deposited in riverbeds, floodplains, lakes, fans, and estuaries.

**Alpine** - The top of mountains that is above tree line, where forest vegetation becomes alpine vegetation.

**Alternative** – An option proposed for decision making.

**Anadromous Fish** - Fish that are born and reared in freshwater, move to the ocean to grow and mature, and return to freshwater to reproduce, e.g. salmon, steelhead and shad.

**Anadromous Fisheries Habitat Assessment** - An assessment conducted in 1994 within the Tongass National Forest (published in 1995) to study the effectiveness of current procedures for protecting anadromous fish habitat and to determine the need for any additional protection.

**Annualized Jobs** – A measurement of employment that equals one employee working one year.

**Aquatic Ecosystem** - A stream channel, lake or estuary bed, the water itself, and the biotic communities that occur therein.

**Aquifer** - A saturated, permeable geologic unit of sediment or rock that can transmit significant quantities of water under ordinary hydraulic processes.

**Aspect** - A position facing a particular direction, usually expressed as a compass direction in degrees or cardinal directions.

**Background** - The distant part of a landscape. The seen or viewed area located from 3-5 miles to infinity from the viewer. (see “Foreground” and “Middleground”)

**Bankfull Width** - The width of a wetted channel when the water surface is at the same elevation as the active floodplain.

**Bark Lechates** - Soluble organic compounds released into water from bark. Lechates cause the water to have a yellow to brown color.

**Basal Area** - The area of the cross section of a tree trunk near its base, usually 4 and 1/2 feet above the ground. Basal area is a way to measure how much of a site is occupied by trees. The term basal area is often used to describe the collective basal area of trees per acre.

**Beach Fringe** - The area inland from salt water shorelines which is typically forested.

**Bedload** - Sediment that moves by sliding, rolling, or bounding on or very near the streambed.

**Benthic** - Pertaining to the sea bottom or to the plant and animal life whose habitat is the bottom of the sea, lake, or river.

**Best Management Practices (BMP)** - Practices determined to be the most effective and practicable means of controlling pollutants at levels compatible with environmental quality goals. BMPs were conceptualized in the 1972 FUS Federal Water Pollution Control Act. BMPs as defined in the USDA Forest Service Soil and Water Conservation Handbook are mandated for use in Region 10 under the Tongass Timber Reform Act.

**Biogeographic Provinces** - Twenty-one ecological subdivisions of Southeast Alaska that are identified by generally distinct ecological, physiogeographic, and biogeographic features. Plant and animal species composition, climate, and geology within each province are generally more similar within than among adjacent provinces. Historical events (such as glaciers and uplifting) are important to the nature of the province and to the barriers that distinguish each province.

**Biological Assessment** - A biological document conducted for major Federal construction projects requiring an environmental impact statement, in accordance with legal requirements under Section 7 of the Endangered Species Act (16 U.S.C. 1536©). The purpose of the assessment and resulting document is to determine whether the proposed action is likely to affect a species that has been listed or proposed as an endangered or threatened species.

**Biological Diversity (Biodiversity)** - The number and abundance of species found within a common environment. This includes the variety of genes, species, ecosystems, and the ecological processes that connect everything in a common environment.

**Biological Evaluation** - A documented USDA Forest Service review of programs and activities that contains sufficient detail to determine how an action or proposed action may affect any species that has been listed or proposed as threatened, endangered, or sensitive.

**Blowdown** - see Windthrow



## 4 References and Lists

**Board Foot** - A unit of timber measurement equaling the amount of wood contained in an unfinished board 1 inch thick, 12 inches long and 12 inches wide.

**Braided Streams or Channels** - A stream flowing in several dividing and reuniting channels resembling the strands of a braid, the cause of division being the obstruction by sediment and/or organic material deposited by the stream.

**Buffer** - A vegetative strip or management zone of varying size, shape, and character maintained along a stream, lake, road, recreation site, or different vegetative zone to mitigate the impacts of action as on adjacent lands, to enhance aesthetic values or as a best management practice.

**Cable Logging - Cable Logging** - see Logging Systems

**Canopy** - The foliage cover in a forest stand consisting of one or several layers. Canopy usually refers to the uppermost layer of foliage, but can be used to describe lower layers in a multi-storied forest.

**Carrying Capacity** - The estimated maximum number of organisms of a given species that can be sustained or survive on a long-term basis within an ecosystem

**Cavity** - A hole in a tree often used by wildlife species, usually birds, for nesting, roosting, and reproduction.

**Cave** - Any naturally occurring void, cavity, recess, or system of interconnected passages beneath the surface of the earth or within a cliff or ledge and which is large enough to permit a person to enter, whether the entrance is excavated or naturally formed. Such a term shall include any natural pit, sinkhole, or other opening which is an extension of a cave entrance or which is an integral part of the cave.

**Channel** - A natural waterway with a definite bed and banks that confine the water.

**Channel Migration** - Movement of a stream or river channel on a floodplain area over an extended period of time.

**Channel Type** - A means of distinguishing parts of a stream system into segments that have fairly consistent physical and biological characteristics.

**Clearcut** - A harvest in which all or almost all of the trees are removed in one cutting.

**Climax** - The culminating stage of plant succession for a given environment. Climax vegetation is stable, self-maintaining, and self-reproducing.

**Coarse Canopy Old-growth Forest** - Old-growth forest that has lower crown density (number of trees) and non-uniform crown sizes and heights including large crowns and many canopy gaps.

**Code of Federal Regulations (CFR)** - A codification of the general and permanent rules published in the *Federal Register* by the executive departments and agencies of the Federal Government.

**Colluvium** - A general term applied to any loose, heterogeneous, and incoherent mass of soil material and/or rock fragments deposited by rainwash, sheetwash, or slow continuous downslope creep, usually collecting at the base of gentle slopes or hillsides.

**Composition** - Ingredients that make up an ecosystem. Composition could include water, minerals, trees, snags, wildlife, soil, microorganisms, and plant species.

**Conifer** - A tree that produces cones, for example, a pine, spruce, or fir tree.

**Connectivity (of Habitats)** – A measure of the extent that forest areas between or outside reserves provide habitat for breeding, feeding, dispersal, and movement. The linkage of similar but separated vegetation stands by patches, corridors or "stepping stones" of like vegetation. This term can also refer to the degree to which similar habitats are linked.

**Consumptive Use** - Use of resources that reduces the supply. Logging and mining are examples of consumptive use.

**Contour** - A line drawn on a map connecting points of the same elevation.

**Corridor** - Habitats, often linear, that facilitate dispersal and movement of wildlife between larger patches of suitable habitat. For example, streamside vegetation may create a corridor of willows and hardwoods between meadows where wildlife feed. (see "Connectivity")

**Cover** - Any feature that conceals wildlife or fish. Cover may be dead or live vegetation, boulders, or undercut streambanks. Animals use cover to rest, feed, and escape from predators.

**Cover Forage Ratio** - The ratio of hiding cover to foraging areas for wildlife species.

**Cover Type (Forest Cover Type)** - Stands of a particular vegetation type that are composed of similar species.

**Created Opening** - An opening in the forest cover created by silvicultural practices.

**Critical Habitat** - Areas designated for the survival and recovery of federally listed threatened or endangered species.

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**Crown** - The tree canopy. The upper part of a tree that carries the main branch system and foliage.

**Crown Height** - The distance from the ground to the base of the crown of a tree.

**Cubic Foot (CF)** - Equivalent to a cube of wood with 1-foot sides. The cubic foot volume is a measure of the total sound wood in a tree and is a more accurate depiction of wood volume than the board foot measure.

**Culturally Modified Tree** - Trees that have been altered by human use, usually for the exploitation of bark and wood products.

**Deer Winter Range (Habitat)** - Locations that provide food and shelter for Sitka black-tail deer under moderately severe to severe winter conditions. Usually associated with high volume old-growth stands at low elevation and with south aspects.

**Deferred Areas** - Areas deferred from harvest (no cutting) in perpetuity or for one rotation. Such areas are deferred from harvest at this time to reduce cumulative effects or to meet specific Forest Plan Standards and Guidelines. Deferments lasting in perpetuity are in areas that became unsuitable following reconnaissance of the originally planned harvest unit (e.g., high-vulnerability karst, RMAs, MMI 4 soils). Deferments lasting until the end of the rotation are in areas of suitable land in the original planned units (e.g., additional buffers that are greater than RMA or karst minimum requirements, buffers placed on Class III or IV streams). These areas are available for future harvest, but have been deferred from harvest for one rotation.

**Desired Condition** - Land or resource conditions that are expected to result if goals and objectives are fully achieved.

**Detrimental Soil Disturbance** - The condition where established threshold values of soil properties are exceeded and result in significant change or impairment to long-term soil productivity.

**Detritus** - Small pieces of dead and decomposing plants and animals; small organic particles such as leaves and twigs.

**Developed Recreation** - That type of recreation that occurs where modifications (improvements) enhance recreation opportunities and accommodate intensive recreation activities in a defined area. For example, skiing requires ski lifts, parking lots, buildings, and roads. Campgrounds require roads, picnic tables, and toilet facilities.

**Development LUDs** - Land use designations that permit commercial timber harvest (Timber Production, Modified Landscape, and Scenic Viewshed) and convert some of the old-growth forest to early-to-mid-successional, regulated forests.



**Diameter at Breast Height (DBH)** - The diameter of a tree 4 and 1/2 feet above its root collar on the uphill side of the tree.

**Direct Employment** - The jobs that are immediately associated with a given activity.

**Dispersed Recreation** – That type of recreation use that requires few, if any, improvements and may occur over a wide area. This type of recreation involves activities related to roads, trails and developed and undeveloped waterways and beaches. The activities do not necessarily take place on or adjacent to a road, trail, or waterway, only in conjunction with it. Activities are often day-use oriented and include hunting, fishing, boating, off-road vehicle use, hiking and among others.

**Distance Zones** - Areas of landscapes visible from priority travel routes and use areas categorized by distance criteria. (Foreground: 0 to ¼ - ½ mile, Middleground: ¼ - ½ mile to 3-5 miles or, Background: greater than 3-5 miles.) Used as a frame of reference in which to discuss landscape characteristics and management activities.

**Disturbance** - A force that results in changes in the structure and composition through natural events such as wind, fire, flood, avalanche, or mortality caused by insect disease outbreaks or by human caused events (e.g. timber harvest).

**Draft Environmental Impact Statement (Draft EIS)** - A statement of environmental effects for a major federal action that is released to the public and other agencies for comment and review prior to a final management decision. Required by Section 102 of the National Environmental Policy Act (NEPA).

**Duff** - The partially decomposed organic material of forest floor beneath the litter of freshly fallen twigs, needles, and leaves.

**Eagle Nest Tree Buffer Zone** - A 330-foot radius around eagle nest trees established in an agreement between the U.S. Fish and Wildlife Service and the USDA Forest Service.

**Early Forest Succession** - The biotic (or life) community that develops immediately following the removal of vegetation in an area.

**Ecological Approach** - An approach to natural resource management that considers the relationships among all organisms, including humans and their environment.

**Ecological Subsections** - Eighty-five terrestrial ecosystems mapped and described for Southeast Alaska and adjoining areas of Canada (Nowacki et al. 2001). These mid-sized terrestrial ecosystems embody similar ecological characteristics including landforms, streams, vegetation, soils, and wetlands. They provide a practical basis for ecosystem management, planning, and research.

## 4 References and Lists

**Ecology** - The interrelationships of living things to one another and the environment, or the study of these interrelationships.

**Ecosystem** - An arrangement of living and non-living things and the forces that move among them. Living things include plants and animals. Non-living parts of ecosystems may be rocks and minerals. Weather and wildfire are two of the forces that act within ecosystems

**Ecosystem Management** - An ecological approach to natural resource management to assure productive, healthy ecosystems by blending social, economic, physical, and biological needs and values.

**Edge** - The more or less well defined boundary between two or more elements of the environment, e.g. a field adjacent to a woodland or the boundary of different silvicultural treatments.

**Effects** - Effects, impacts, and consequences as used in this environmental impact statement are synonymous. Effects may be ecological (for example, the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historical, cultural, economic, or social, and may be direct, indirect, or cumulative.

1. *Direct effects: Results of an action occurring when and where the action takes place.*
2. *Indirect effects: Results of an action occurring at a location other than where the action takes place and/or later in time, but in the reasonably foreseeable future.*
3. *Cumulative effects: Effects on the environment that result from separate, individual actions that collectively become significant over time.*

**Endangered Species** - Any species of animal or plant that is in danger of extinction throughout all or a significant portion of its range. Plant or animal species identified and defined in accordance with the 1973 Endangered Species Act and published in the Federal Register.

**Endemic Plant or Organism** - A plant or animal whose distribution is relatively limited geographically. For example, a particular species or subspecies may occur on only one or a very few islands.

**Environmental Analysis** - An analysis of alternative actions and their predictable long and short-term environmental effects. Environmental analyses include physical, biological, social, and economic factors.

**Environmental Impact Statement (EIS)** - A document prepared by a federal agency in which anticipated environmental effects of a planned course of action or development are evaluated. A federal statute (Section 102 of the National Environmental Policy Act of 1969) requires that such statements be prepared. It is prepared first in draft or review form, and then in a final form. An impact statement includes

the following points: (1) the environmental impact of the proposed action, (2) any adverse impacts which cannot be avoided by the action, (3) the alternative courses of actions, (4) the relationships between local short-term use of the human environment and the maintenance and enhancement of long-term productivity, and (5) a description of the irreversible and irretrievable commitment of resources which would occur if the action were accomplished.

**Ephemeral Streams** - A stream or portion of a stream that flows only in direct response to precipitation, receiving little or no water from springs and no long continued supply from snow or other sources, and whose channel is at all times above the water table.

**Erosion** - The wearing away of the land surface by rain, running water, wind, ice, gravity, or other natural or anthropogenic agents, including gravitational creep and tillage.

**Estuary** - An ecological system at the mouth of a stream where fresh water and salt water mix, and where salt marshes and intertidal mudflats are present. The landward extent of an estuary is the limit of salt-intolerant vegetation, and the seaward extent is a stream's delta at mean flow. FP 7-12

**Euphausiid** - A small luminescent crustacean that resembles a shrimp and makes up an important part of marine plankton.

**Evapotranspiration** - The conversion of water, whether surface water, soil moisture (both by evaporation), or within plants (transpiration) into water vapor that is released to the atmosphere.

**Even-aged Management** - The application of a combination of actions that result in the creation of stands in which trees of essentially the same age grow together. The difference in age between trees in forming the main canopy level of a stand usually does not exceed 20 percent of that age of the stand at harvest rotation age.

**Executive Order** - An order or regulation issued by the President or some administrative authority under his or her direction.

**Existing Visual Condition** - The appearance of the Forest to a casual visitor. The six visual quality (condition) categories that correspond to visual quality objectives are:

*Type I: Appears to be untouched by human activities, except for trails needed for access; only ecological changes have occurred.*

*Type II: Changes in landscape are not noticed unless pointed out.*

*Type III: Changes in the landscape are noticed as minor disturbances, but the natural appearance of the landscape remains dominant.*



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*Type IV: Changes in the landscape are easily noticed and perceived as disturbances, but resemble natural patterns.*

*Type V: Changes stand out as a dominant impression on the landscape, yet are shaped to resemble natural patterns from 3-5 miles or more distant.*

*Type VI: Changes are in glaring contrast to the landscape's natural appearance; excessive visual alteration has occurred.*  
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**Fauna** - The animal life of an area.

**Felling** - The act of cutting down trees.

**Final Environmental Impact Statement (Final EIS)** - The final version of the statement of environmental effects required for major federal actions under Section 102 of the National Environmental Policy Act (NEPA). The FEIS is a revision of the Draft Environmental Impact Statement (DEIS) to include public and agency responses to the draft. The decision maker chooses which alternative to select from the FEIS, and subsequently issues a Record of Decision (ROD).

**Fisheries Habitat** - Streams, lakes, and reservoirs that support fish, or have the potential to support fish.

**Floodplain** - The level or nearly level land with alluvial soils on either or both sides of a stream or river that is subject to overflow flooding during periods of high water level.

**Flora** - The plant life of an area.

**Fluvial** - Of, or pertaining to streams and rivers.

**Forage** - All browse and non-woody plants that are eaten by wildlife.

**Forb** - A grouping/category of herbaceous plants which are not included in the grass, shrub or tree groupings/categories; generally smaller flowering plants. Forbs contain little or no wood material.

**Foreground** - The part of a scene or landscape that is nearest to the viewer. The foreground is located less than 1/4 mile from the viewer. (see "Background" and "Middleground")

**Forest Cover Type** - see Cover Type

**Forest Health** - An expression of the relationship among biotic and abiotic influences on the forest (i.e., insects, diseases, atmospheric deposition, silvicultural treatments, harvesting objectives for a given forest unit now or in the future and sustain long-term site productivity).

**Forest Land** - Land at least 10 percent occupied by forest trees of any size or formerly having had such tree cover. This land is not currently developed for non-forest use.

**Forest Plan** - Source of management direction for an individual Forest that specifies activity and output levels for a period of 10-15 years. Management direction in the Forest Plan is based on issues identified at the time of the Plan's development.

**Forest Road or Trail** - A road or trail wholly or partly within or adjacent to and serving the National Forest System that the Forest Service determines is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources (36 CFR 212.1).

**Forest Supervisor** - The official responsible for administering National Forest lands on an administrative unit that usually consists of one or more National Forests. The Forest Supervisor reports to the Regional Forester.

**Forest Transportation Atlas** - A display of the system of roads, trails, and airfields of an administrative unit.

**Forest Transportation Facility** - A forest road or trail or an airfield that is displayed in a forest transportation atlas, including bridges, culverts, parking lots, marine access facilities, safety devices, and other improvements appurtenant to the forest transportation system (36 CFR 212.1).

**Forest Transportation System** - The system of National Forest System roads, National Forest System trails, and airfields on National Forest System lands (36 CFR 212.1).

**Forest-wide Standards and Guidelines** - A set of rules and guidance that directs management activities and establishes the environmental quality, natural renewable and depletable resource requirements, conservation potential, and mitigation measures that apply to several land use designations.

**Fragmentation** - An element of biological diversity that describes the natural condition of habitats in terms of the size of discrete habitat blocks or patches, their distribution, the extent to which they are interconnected, and the effects of management on these natural conditions. Also the process of reducing the size and connectivity of stands within a forest.

**Free Use** - Residents and others in Alaska may take free of charge green or dried timber from the Tongass National Forest for personal use but not for sale. The amount of material granted to any one person in one year shall not exceed 10 MBF of saw timber and 25 cords of wood.

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**Frost Heave** - The upward displacement of normal soil levels or of road coarses as a result of expansion due to ice formation in frozen soil.

**Function** - All the processes within an ecosystem through which elements interact; for example, succession, the food chain, fire, weather, and the hydrologic cycle.

**Gap Phase Dynamics** - The death of one or a few overstory trees that creates an opening in the forest and permits a small group of new trees to grow from existing vegetation or seed germination.

**Geographic Information System (GIS)** - Information processing technology to input, store, manipulate, analyze, and display spatial and attribute data to support the decision making process. GIS is a system of computer maps with corresponding site-specific information that can be electronically combined to provide reports and maps.

**Geomorphic Processes** - Processes that change the form of the earth, for example, volcanic activity, running water, or glacial action.

**Geomorphology** - The study of the forms of the land surface and the processes producing them. Also, the study of the underlying rocks or parent materials and the landforms present formed in geological time.

**Ground Water** - The subsurface water in both saturated and unsaturated zone water at a pressure equal to or greater than atmospheric that is free to move under the influence of gravity. Groundwater is recharged through seepage and springs.

**Group Selection** - A method of tree harvest in which trees are removed periodically in small groups. This silvicultural treatment results in small openings that form mosaics of age class groups in the forest.

**Habitat** - The place, natural or otherwise (including climate, food, cover and water), where an animal, plant, or population normally lives and develops.

**Habitat Capability** - The ability of a land area or plant community to support a given species of wildlife.

**Habitat Diversity** - A number of different types of wildlife habitat within a given area.

**Habitat Suitability Index (HSI)** - A measure of the capability of the habitat to support deer, based on a variety of environmental factors, for example, slope, elevation, aspect, and forest type.

**Habitat Type** - A way to classify land area. A habitat type can support certain climax vegetation, both tree and undergrowth species. Habitat typing can indicate the biological potential of a site.



**Hard Snags/Soft Snags** - Hard snags are dead trees that have little decay and are generally still hard wood. Soft snags are dead trees that have a considerable amount of decay and are generally soft, broken wood.

**Helicopter Logging** - see Logging Systems

**Heritage Resources** - The physical remains of districts, sites, structures, buildings, networks, events, or objects used by humans in the past. They may be historic, prehistoric, architectural, or archival in nature. Heritage resources are non-renewable aspects of our national heritage. (formerly “cultural resources”).

**High Hazard Soil (MMI 4)** - Soil material prone to mass movement. Soil type, geologic bedding, and slope angle are factors considered when establishing which sites are high hazard (See Mass Movement Index).

**Horizontal Diversity** - The distribution and abundance of different plant and animal communities or different stages of plant succession across an area of land. Greater numbers of communities in an area mean greater horizontal diversity.

**Hydric Soils** - A soil that is wet long enough to periodically produce anaerobic conditions, thereby influencing the growth of plants.

**Hydrologic Cycle** - The complete cycle through which water passes, commencing as atmospheric water vapor, passing into liquid and solid form as precipitation, thence along or into the ground surface, and finally again returning to the form of atmospheric water vapor by means of evaporation and transpiration. Also called Water Cycle.

**Hydrologic Recovery** - A return to natural conditions of water collection, storage, and discharge.

**Hydrology** - The science dealing with the study of water on the land, in the soil and underlying rocks, and in the atmosphere.

**Igneous Rock** - Rocks formed when high temperature, molten mineral matter cooled and solidified.

**Indirect Employment** - The jobs in service industries that are associated with or support a given activity.

**Instream Flow** - The quantity of water necessary to meet seasonal stream flow requirements to accomplish the purposes of the National Forests, including, but not limited to fisheries, visual quality, and recreational opportunities.

**Interception** - The process where precipitation is caught and held by foliage and lost by evaporation before it reaches the ground.

**Interdisciplinary Team (IDT)** - A group of individuals with different training assembled to solve a problem or perform a task. The team is

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assembled out of recognition that no one scientific discipline is sufficiently broad to adequately solve the problem. Through interaction, participants bring different points of view and a broader range of expertise to bear on the problem.

**Intermediate Stand Treatment** - A stand management treatment that manipulates stand growth, composition, structure, or tree quality. Intermediate treatments include thinning, pruning, release, salvage, and sanitation cutting. These stand treatments do not attempt to obtain new tree regeneration. Some treatments such as salvage cutting or commercial thinning result in the harvest of forest products.

**Intermittent Stream** - A stream that flows only at certain times of the year when it receives water from streams or from some surface source, such as melting snow.

**Inventoried Roadless Area (IRA)** - An undeveloped area typically exceeding 5,000 acres that meets the minimum criteria for Wilderness consideration under the Wilderness Act and that was inventoried during the USDA Forest Service's Roadless Area Review and Evaluation (RARE II) process, subsequent assessments, or forest planning.

**Irretrievable Commitment** - One of the categories of effects mentioned in the National Environmental Policy Act to be included in statements of environmental impacts. An irretrievable effect applies to losses of production or commitment of renewable natural resources. For example, while an area is used as a ski area, some or all of the timber production there is irretrievably lost. If the ski area closes, timber production could resume; the loss of timber production during the time that the area was devoted to winter sports is irretrievable. However, the loss of timber production during that time is not irreversible, because it is possible for timber production to resume if the area is no longer used as a ski area.

**Irreversible Commitment** - Decisions causing changes which cannot be reversed. A category of effects mentioned in statements of environmental impacts that applies to non-renewable resources, such as minerals and archaeological sites. Irreversible effects can also refer to effects of actions that can be renewed only after a very long period of time, such as the loss of soil productivity.

**Issue** - Actual or perceived effects, risks, and hazards on physical, biological, social, or economic resources. A point, matter, or section of public discussion or interest to be addressed or decided.

**Karst** - A type of topography that develops in areas underlain by soluble rocks, primarily limestone. Dissolution of the subsurface strata results in areas of well-developed surface drainage that are sinkholes, collapsed channels, or caves.

**Knutsen-Vandenburg Fund (KV)** - The portion of timber sale receipts collected and used for reforestation and other renewable resource projects on the sale area.

**Land Classification** - Forested land is classified under each of the land management alternatives according to how it relates to the management of timber resource. The following are definitions of timber classifications used for this purpose.

1. *Nonforest: Land that has never supported forests and land formerly forested where use for timber production is now precluded by development or other uses.*
2. *Forest: Land at least 10 percent stocked (based on crown cover) by forest trees of any size or land formerly having had such tree cover and not currently developed for nonforest use.*
3. *Suitable or suitable available: Land to be managed for timber production on a regulated basis.*
4. *Unsuitable: Forest land withdrawn from timber utilization by statute or administrative regulation (for example, wilderness) or identified as inappropriate for timber production in the forest planning process.*
5. *Commercial forest: Forest land tentatively suitable for the production of continuous crops of timber and that has not been withdrawn.*

**Land Use Designation (LUD)** – Land use designations describe the attributes and resource conditions that an area of the Forest should be managed for (management prescriptions). There are 19 LUDs described in the Forest Plan.

1. *LUD WW – Wilderness, 2,622,913 acres of Congressionally designated Wilderness.*
2. *LUD WM – Wilderness National Monument, 3,098,820 acres of the Congressionally designated Wilderness portions of Admiralty Island and Misty Fiords National Monuments.*
3. *LUD NW – Nonwilderness National Monument, 163,654 acres of Admiralty Island and Misty Fiords National Monuments that is not Congressionally designated Wilderness.*
4. *LUD RA – Research Natural Area, 59,545 acres of ecologically important areas preserved in their natural condition for purposes of research, monitoring, education, or to maintain natural diversity.*
5. *LUD SA – Special Interest Area, 297,173 acres with unique cultural, geological, botanical, zoological, recreational,*



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*scenic, or other special features that are protected, maintained, or interpreted.*

6. *LUD RM – Remote Recreation, 2,129,169 acres of unmodified land for primitive recreation opportunities.*
7. *LUD MW – Municipal Watershed, 45,776 acres designated to protect municipal water supplies.*
8. *LUD OG – Old-growth Habitat, 1,131,059 acres of old-growth forest and associated ecological processes.*
9. *LUD SM – Semi-remote Recreation, 2,941,350 acres of natural-appearing landscape for semi-primitive recreation opportunities.*
10. *LUD L2 – Land Use Designation II, 719,000 acres of Congressionally designated unroaded land designated for protection under the Tongass Timber Reform Act (TTRA).*
11. *LUD WR – Wild River, 129,650 acres managed as Wild according to the Wild and Scenic Rivers Act (Public Law 90-542).*
12. *LUD SR – Scenic River, 36,460 acres managed as Scenic according to the Wild and Scenic Rivers Act.*
13. *LUD RR – Recreational River, 36,470 acres managed as Recreational according to the Wild and Scenic Rivers Act.*
14. *LUD EF – Experimental Forest, 17,260 acres for forest research jointly administered with Pacific Northwest Experimental Station.*
15. *LUD SV – Scenic Viewshed, 496,613 acres for timber production while minimizing the visibility from Visual Priority Travel Routes and Use Areas.*
16. *LUD ML – Modified Landscape, 622,387 acres for timber production while minimizing the visibility in the foreground distance zone (up to ¼ mile from the viewer).*
17. *LUD TM – Timber Production, 2,580,821 acres for timber production.*
18. *LUD MM – Minerals, 166,215 acres for mineral development.*
19. *LUD TUS – Transportation and Utility System – for existing and future major public transportation and utility systems, including those identified by the State of Alaska and the Alaska Energy Authority.*

**Land Use Planning** - The process of organizing the use of lands and their resources to best meet people's needs over time, according to the land's capabilities.

**Landing** - Any place where cut timber is decked for transport from the timber sale area.

**Landscape** - A large land area composed of interacting ecosystems that are repeated due to factors such as geology, soils, climate, and human impacts. Landscapes are often used for coarse grain analysis.

**Landslide** - See Mass Movement or Mass Wasting.

**Large Woody Debris (LWD)** - Any large piece of relatively stable woody material having a diameter of at least 4 inches and a length greater than 3 feet that intrudes into the stream channel.

**Lithic Artifact Assemblage** – The collection of stone tools from an archaeological site.

**Litter (Forest Litter)** - The freshly fallen or only slightly decomposed plant material on the forest floor. This layer includes foliage, bark fragments, twigs, flowers, and fruit.

**Log Transfer Facility (LTF)** - A facility that is used for transferring commercially harvested logs to and from a vessel or log raft, or the formation of a log raft. The LTF is wholly or partially constructed in waters of the United States, and its location and construction are regulated by the 1987 Amendments to the Clean Water Act. Formerly termed “terminal transfer facility” or “log dump.”

**Logging Systems** - The equipment configuration employed for yarding logs; that is, moving them from the stump to the “landing,” the point on a road at which they are loaded on trucks for transportation from the unit. Logging systems fall into the following main categories, in order of increasing cost:

1. *Ground-based systems: These employ mobile machines that travel throughout the unit to skid or swing logs to the landing. Tractor logging, employing wheeled or tracked tractors or “skidders” to “skid” logs, is widely used in the South 48 but rarely on the Tongass because of the wet or rocky soils. Much more common in Southeast Alaska is shovel logging, in which a log loader or “shovel” moves logs from the stump to the landing by repeatedly swinging them closer. Shovel logging has relatively low site impacts since the machine typically makes only one pass over a piece of ground to reposition itself. On wet sites, impacts can be largely mitigated by having the machine build a pad of slash upon which to travel. Ground systems can be used to log partial cuts or clearcuts on flat or moderate terrain.*

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2. *Cable systems: These employ a stationary “yarder” at the landing; that is, a set of winches powering wire rope cables that travel through the top of an integrally mounted steel tower. The cables move logs to the landing, lifting them partly or completely clear of the ground through the lift provided by the tower. Because the equipment is stationary at the landing, and does not travel on the unit, site impacts are limited to soil and stream disturbance caused by dragging the logs. “Full suspension,” where the log is lifted completely clear of the ground, may be feasible, in which case these impacts are absent. “Partial suspension,” in which one end of the log is lifted clear of the ground while the other end drags on the ground, is more readily achievable. Cable systems may be employed on any terrain, with different systems being adapted to different site conditions.*
  - a. *Highlead: A simple cable yarding system, using a two-drum yarder to provide lift to the front end of the logs. “Grabinski” is a modified highlead cable system capable of enhanced lift. Highlead is capable of clearcut logging, but not partial cuts.*
  - b. *Skyline: The various skyline systems employ an additional cable or “skyline” to impart additional lift to the logs. Site impacts are therefore reduced. The system common in southeast Alaska is the “running skyline,” which is typically highly mobile. It is capable of logging clearcuts and, in certain conditions, partial cuts. The “slackline” is typically less mobile, but with greater distance capabilities and with the capability to “sideblock” logs from out to the side of the skyline. It is thus usually applied in the more difficult terrain. It is capable of yarding clearcuts and, for some equipment configurations and site conditions, partial cuts. The “shotgun” or “gravity return” system is restricted to uphill yarding. It can log clearcuts and, in some equipment configurations, partial cuts.*
  - c. *Cold-deck and swing: An obsolete system once widely employed in Alaska, whereby a highlead yarder assembled a “cold-deck” or pile of logs for subsequent transportation by skyline to the landing.*
  - d. *A-frame: Now also obsolete, this system employed a yarder mounted on a raft to yard logs into a bay or lake.*
  - e. *Multispan skyline: An intermediate support spar is rigged to lift the skyline clear of topographical obstacles. This system has found very little application*



*in old-growth timber but may prove more practical in future second growth thinning operations.*

3. *Aerial logging systems: Systems where the cut logs are moved from the stump to the landing without touching the ground. The only such system practical for the Alaska operating environment is helicopter logging, which employs a heavy-lift helicopter for yarding. Typically the maximum practical helicopter yarding distance is 5,000 feet; additionally, the flight path cannot exceed 40 percent downhill or 30 percent uphill, and a relatively large landing of approximately one acre is required. Helicopter logging is capable of logging any silvicultural prescription.*

**Low-productive Forest Land** - Forested land that does not support enough timber volume to meet the criteria for productive forest land.

**Macro Climate** - The general, large-scale climate of an area, as distinguished from the smaller scale micro climates within it.

**Maintenance** – The upkeep of the entire forest system transportation facility including surface and shoulders, parking and side areas, structures, and such traffic-controlled devices as are necessary for its safe and efficient utilization.

**Management Action** - Any activity undertaken as part of the administration of the National Forest.

**Management Direction** - A statement of multiple-use and other goals and objectives, the associated land use prescriptions, and standards and guidelines for attaining them.

**Management Indicator Species (MIS)** - Plant or animal species, communities, or special habitats selected for emphasis in planning, and which are monitored during forest plan implementation to assess the effects of management activities on their populations and the populations of other species with similar habitat needs which they may represent.

**Mass Movement or Mass Wasting** - The down-slope movement of large masses of earth material by the force of gravity. May also be called a landslide.

**Mass Movement Index (MMI)** - Rating used to group soil map units that have similar properties with respect to the stability of natural slopes.

**Matrix** - The least fragmented, most continuous pattern element of a landscape; the vegetation type that is most continuous over a landscape.

**Mature Timber** - Trees that have attained full development, especially height, and are in full seed production.

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**McGilvery (Soil Series)** - Soil series composed of a thin surface layer (less than 8 inches deep) of organic material overlying bedrock. These soils are associated with cliffs and rock outcrops and are sensitive to disturbance.

**Mean Annual Increment of Growth** - The total increase in size or volume of individual trees or the increase in size and volume of a stand of trees at a particular age, divided by that age in years.

**Memorandum of Understanding (MOU)** - An agreement between the Forest Service and others agencies resulting from consultation between agencies that states specific measures the agencies will follow to accomplish a large or complex project. A memorandum of understanding is not a fund obligating document.

**Microclimate** - The climate of a small site. A microclimate may differ from the climate at large of the area due to aspect, tree cover (or the absence of tree cover), or exposure to winds.

**Middleground** - The visible terrain beyond the foreground where individual trees are still visible but do not stand out distinctly from the landscape; area located from 1/4 mile to 5 miles from the viewer. (see "Foreground" and "Background")

**Mineral Soil** - Soil that consists mainly of inorganic material, such as weathered rock, rather than organic matter.

**Mission (of the USDA Forest Service)** - "To Care for the Land and Serve the People". As set forth in law, the mission is to achieve quality land management under the sustainable multiple-use management concept to meet the diverse needs of people.

**Mitigation** - Actions taken to avoid, minimize, or rectify the impact of land management activities.

**Mixed Stand** - A stand consisting of two or more tree species.

**Model** - A representation of reality used to describe, analyze, or understand a particular concept. A model may be a relatively simple qualitative description of a system or organization, or a highly abstract set of mathematical equations. A model has limits to its effectiveness and is used as one of several tools to analyze a problem.

**Monitoring and Evaluation** - The periodic evaluation of forest management activities to determine how well objectives were met and how management practices should be adjusted. (see "Adaptive Management")

**Moraine** - A mound, ridge, or other distinct accumulation of unsorted, unstratified glacial drift, predominantly till, deposited chiefly by direct action of glacier ice, in a variety of topographic landforms that are independent of control by the surface on which the drift lies.

**Mortality** - Trees that were merchantable and have died within a specified period of time. The term mortality can also refer to the rate of death of a species in a given population or community.

**Mosaic** - Areas with a variety of plant communities over a landscape, such as areas with trees and areas without trees occurring over a landscape.

**Motor Vehicle** – Any self-propelled vehicle other than:

- 1) A vehicle operated on rails.
- 2) Any wheelchair or mobility device including one that is battery powered, designed solely for use by a mobility-impaired person for locomotion and is suitable for use in an indoor pedestrian area.

**Motor Vehicle Use Map** - A map reflecting designated roads, trails, and areas on an administrative unit or a Ranger District of the National Forest System.

**Multiple-use Management** - The management of all the various renewable surface resources of National Forest lands for a variety of purposes such as recreation, range, timber, wildlife and fish habitat, and watershed.

**Muskeg** - A type of bog found in Southeast Alaska that has developed over thousands of years in depressions or flat areas on gentle to steep slopes. May also be called peatlands.

**National Environmental Policy Act (NEPA)** - Congress passed NEPA in 1969 to encourage productive and enjoyable harmony between people and their environment. One of the major tenets of NEPA is its emphasis on public disclosure of possible environmental effects of any major action on public lands. Section 102 of NEPA requires a statement of possible environmental effects to be released to the public and other agencies for review and comment.

**National Forest Management Act (NFMA)** - A law passed in 1976 as an amendment to the Forest and Rangeland Renewable Resources Planning Act requiring the preparation of regional guides and forest plans and the preparation of regulations to guide that development.

**National Forest Recreation Sites (NFRS)** - National Forest recreation sites that have been inventoried.

**National Forest System Road** – A forest road other than a road which has been authorized by a legally documented right-of-way held by a state, county or other local public road authority.

**National Forest System Trail**– A forest trail other than a trail which has been authorized by a legally documented right-of-way held by a state, county, or other public road authority (36 CFR 212.1).



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**National Register of Historic Places** - A register of heritage resources of national, state, or local significance, maintained by the Department of the Interior.

**National Wild and Scenic River System** - Rivers with outstanding scenic, recreational, geological, fish and wildlife, historic, cultural, or other similar values, designated by Congress under the Wild and Scenic Rivers Act of 1968 and amended in 1986, for preservation of their free-flowing condition. May be classified and administered under one or more of the following categories: Wild, Scenic, and Recreational.

**Native Selection** - Application by Native corporations and individuals to a portion of the U.S. Department of Interior Bureau of Land Management for conveyance of lands withdrawn in fulfillment of Native entitlements established under ANCSA.

**Natural Barrier** - A natural feature that will restrict animal travel, for example, a dense stand of trees or downfall.

**Natural Disturbance** - see Disturbance

**Natural Resource** - A feature of the natural environment that is of value in serving human needs.

**Nest Survey** - A way to estimate the size of a bird population by counting the number of nests in a given area.

**Net Sawlog Volume** - Total volume less deductions for rot, sweep, or other defects affecting use for lumber products.

**No Action Alternative** - The most likely condition expected to exist in the future if current management direction were to continue unchanged.

**Noncommercial Vegetative Treatment** - The removal of trees for reasons other than timber production.

**Nonconsumptive Use** - The use of a resource that does not reduce the supply. Bird watching is a non-consumptive use of wildlife, for example. Boating and fishing are non-consumptive uses of water.

**Non-interchangeable Component (NIC)** - Increments of the suitable land base and their contribution to the allowable sale quantity (ASQ) that are established to meet Forest Plan objectives. They are identified as parcels of land and the type of timber thereon which are differentiated for the purpose of Forest Plan implementation. The total ASQ is derived from the sum of the timber volumes from all NICs. NICs cannot be substituted for each other in the timber sale program.

**Nonpoint Source Pollution** - Pollution whose source is not specific in location. The sources of the discharge are dispersed, not well defined, or constant. Rain storms and snowmelt often make this type of

pollution worse. Examples include sediments from logging activities and runoff from agricultural chemicals.

**Non-renewable Resource** - A resource whose total quantity does not increase measurably over time. Each use of the resource diminishes the supply.

**Notice of Intent (NOI)** - A notice printed in the *Federal Register* announcing that an Environmental Impact Statement will be prepared. The NOI must describe the proposed action and possible alternatives, describe the agency's proposed scoping process, and provide a contact person for further information.

**Nutrient Cycle** - The circulation of chemical elements and compounds, such as carbon and nitrogen, in specific pathways from the non-living parts of ecosystems into the organic substances of the living parts of ecosystems, and then back again to the non-living parts of the ecosystem. For instance, nitrogen in wood is returned to the soil as the dead tree decays; the nitrogen again becomes available to living organisms in the soil, and upon their death, the nitrogen is available to plants growing in that soil.

**Off-highway Vehicle (OHV)** – Any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain.

**Old-growth** - Old forests often containing several canopy layers, a variety in tree sizes and species, decadent old trees, and standing and dead woody material.

**Old-growth Reserve (OGR)** - A contiguous unit of old-growth habitat managed to maintain the integrity of the old-growth forest ecosystem. OGRs are the same as the Old-growth Habitat LUD.

**Open Road Density** - The length of roads open for public access and use per unit area of land; usually expressed as miles of open road per square mile of land.

**Organic Soil** - Soils that contain a high percentage of organic matter (greater than 20 percent) throughout the soil depth.

**Overmature Timber** - Trees that have attained full development, particularly in height, and are declining in vigor, health, and soundness.

**Overstory** - The upper canopy layer; the plants below comprise the understory.

**Palustrine** - Non-tidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity is below 0.50 percent.

**Parent Material** - The mineral or organic matter from which the upper layers of soil are formed.

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**Partial Cut** - Method of harvesting trees where any number of live stems are left standing in any of a variety of spatial patterns.

**Patch**- An area of homogeneous vegetation, in structure and composition.

**Percolation** - Downward flow or infiltration of water through the pores or spaces of rock or soil.

**Perennial Stream** - A stream that flows throughout the year and from source to mouth

**Personal Use** - The use of a forest product, such as firewood, for home use and not for commercial use.

**Planning Area** - The area of National Forest land covered by a Forest Plan.

**Planning Period** - The 10-year time frame for which goods, services, and effects were projected in the development of the Forest Plan.

**Plant Community** - A group of one or more populations of plants in a common spatial arrangement. (FSM 2060)

**Pole Timber** - Trees between 5 and 9 inches in diameter at breast height.

**Pole or Sapling** - The stage of forest succession where trees are between three and seven inches diameter and are the dominant vegetation.

**Population Viability** - Probability that a population will persist for a specified period of time across its range.

**Practicable** - Consistent with enforceable policies of approved management programs unless compliance is prohibited based upon the requirements of existing law applicable to the Federal agency's operations.

**Predator** - An animal that lives by preying on other animals. Predators are at or near the tops of food chains.

**Prescription** - Management practices selected to accomplish specific land and resource management objectives within a forest stand.

**Present Net Value (PNV, also called Present Net Worth)** - The measure of the economic value of a project when costs and revenues occur in different time periods. Future revenues and costs are "discounted " to the present by an interest rate that reflects the changing value of a dollar over time. The assumption is that dollars today are more valuable than dollars in the future. PNV is used to compare project alternatives that have different cost and revenue flows.



**Process Group** - A combination of similar stream channel types based on major differences in landform, gradient, and channel shapes.

**Productive** - The ability of an area to provide goods and services and to sustain ecological values.

**Productive Forest Land** - Forest land that is capable of producing at least 20 cubic-feet of annual tree growth per acre or contains at least 8,000 board feet of net timber volume per acre. This includes second-growth stands that have regenerated with conifer species after natural or human disturbance.

**Productive Old-growth (POG)** - Old-growth stands capable of producing 20 cubic feet per acre per year with 8,000 or more board feet per acre.

**Programmed Commercial Timber Harvest** - Timber harvest that occurs on suitable forested lands that contributes to the Tongass National Forest Allowable Sale Quantity.

**Project Record** – A detailed, formal account of the planning process for NEPA documents.

**Public Involvement** - The use of appropriate procedures to inform the public, obtain early and continuing public participation, and consider the views of interested parties in planning and decision making. This may include meetings, conferences, seminars, workshops, tours, written comments, responses to survey questionnaires, and similar activities.

**Public Land** - Land for which title and control rests with a government including, Federal, state, regional, county, or municipal.

**Qualitative** - Relating to or involving comparisons based on individual qualities.

**Quantitative** - Relating to an amount.

**Ranger District** - The administrative sub-unit of a National Forest that is supervised by a District Ranger who reports directly to the Forest Supervisor.

**Raptor** - A bird of prey, such as a eagle or hawk.

**RARE II** - Roadless Area Review and Evaluation. The national inventory of roadless and undeveloped areas within the National Forests and Grasslands.

**Recharge** - The addition of water to ground water by natural or artificial processes.

**Record of Decision (ROD)** - An official document in which a deciding official states the chosen activity (alternative) that will be implemented from a prepared EIS.

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**Recreation Opportunity Spectrum (ROS)** - A land classification system with seven categories to designate land by its setting and the probable recreation experiences and activities it affords. Each class is defined in terms of the degree to which it satisfies certain recreation experience needs based on the extent to which the natural environment has been modified, the type of facilities provided, the degree of outdoor skills needed to enjoy the area and the relative density of recreation use.

1. *Primitive – Unmodified environment generally greater than 5,000 acres and at least three miles from motorized travel routes.*
2. *Semi-primitive Non-motorized – Natural or natural-appearing environment generally greater than 2,500 acres and between ½ mile and three miles from motorized travel routes.*
3. *Semi-primitive Motorized- Natural or natural-appearing environment generally greater than 2,500 acres within ½ mile of motorized travel routes.*
4. *Roaded Natural – Resource modification and utilization are evident, in a predominantly natural-appearing environment within ½ mile of motorized travel routes.*
5. *Roaded Modified – Vegetative and landform alterations typically dominate the landscape. There is moderate evidence of other users on roads and little interaction with other users.*
6. *Rural – The natural environment is substantially modified by land use activities. Opportunity to associate with other users and convenience of facilities is important.*
7. *Urban – Urbanized environment with structures, traffic lights and paved streets. May have natural appearing backdrop. Recreation places may be city parks and large resorts.*

**Recreation Places** - Identified geographical areas having one or more physical characteristics that are particularly attractive to people in recreation activities. They may be beaches, streamside areas, roadside areas, trail corridors, hunting areas, or the immediate area surrounding a lake, cabin site, or campground.

**Recreation Site** - A specific site and/or facility occurring within a Recreation Place. Examples of recreation sites include: recreation cabins, trailheads, picnic areas, and wildlife viewing blinds.

**Redd** - A nest made in gravel, consisting of a depression hydraulically dug by a fish for egg deposition and then refilled with gravel.

**Red pipe** – One of three classifications of stream crossings (culverts) in which one or more stages of fish development (juvenile or adult) are restricted at specified design flows. Conditions are assumed to be inadequate for fish passage.

**Reforestation** - The restocking of an area with forest trees, by either natural or artificial means.

**Regeneration** - The renewal of a tree crop by either natural or artificial means. The term is also used to refer to the young crop itself.

**Regional Forester** - The official of the USDA Forest Service responsible for administering an entire region of the USDA Forest Service.

**Release Cutting** - Removal of competing vegetation to allow desired tree species to grow.

**Reserve Trees** - Live or dead trees that are retained for various resource objectives such as wildlife, structural diversity, etc.

**Resident Fish** - Fish that are not migratory and complete their life cycles in fresh water.

**Residual Stand** - A stand composed of trees remaining after any type of intermediate harvest.

**Resource Planning Act (RPA) Assessment and Program** - The RPA Assessment is prepared every 10 years and describes the potential of the nation's forests and rangelands to provide a sustained flow of goods and services. The RPA Program is prepared every 5 years to chart the long-term course of USDA Forest Service management of the National Forests, assistance to state and private landowners, and research. They are prepared in response to Sections 3 and 4 of the Forest and Rangeland Renewable Resources Planning Act of 1974 (16 U.S.C. 1601).

**Responsible Official** - The USDA Forest Service employee who has been delegated the authority to carry out a specific planning action.

**Restoration (of Ecosystems)** - Actions taken to modify an ecosystem to achieve a desired, healthy, and functioning condition.

**Retention** - The amount of commercial forest land removed from the timber base to protect other resources. .

**Revegetation** - The re-establishment and development of a plant cover by either natural or artificial means, such as re-seeding.

**Riparian Area** - The area including a stream channel, lake or estuary bed, the water itself, and the plants that grow in the water and on the land next to the water.

**Riparian Ecosystem** - The ecosystems around or next to water areas that support unique vegetation and animal communities as a result of the influence of water.

**Riparian Management Area (RMA)** - The area including water, land, and plants adjacent to perennial streams, lakes, and other bodies



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of water that is managed for the inherent qualities of the riparian ecosystem.

**Road** – A motor vehicle route over 50 inches wide, unless identified and managed as a trail (36 CFR 212.1).

**Road Construction or Reconstruction** – Supervising, inspecting, actual building and incurrence of all costs incidental to the construction or reconstruction of a road (36 CFR 212.1).

**Road Decommissioning** – Activities that result in the stabilization and restoration of unneeded roads to a more natural state (36 CFR 212.1), (FSM 7703).

**Road Density** - The number of road miles per square mile of land area ( $\text{mi}/\text{mi}^2$ ).

**Road Maintenance** - The ongoing upkeep of a road, necessary to retain or restore the road to the approved road management objective (FSM 7712.3).

**Road Maintenance Level** - The level of service maintained for a specific road, consistent with road management objectives and maintenance criteria (FSH 7709.58, section 12.3)

1. *Maintenance Level 1 – Assigned to intermittent service roads during the time they are closed to vehicle traffic. The closure period is one year or longer. Basic custodial maintenance is performed.*
2. *Maintenance Level 2 – Assigned to roads open for use by high clearance vehicles.*
3. *Maintenance Level 3 – Assigned to roads maintained for passenger car use but not for comfort and convenience.*
4. *Maintenance Level 4 – Assigned to roads that provide moderate comfort and convenience at moderate speeds.*
5. *Maintenance Level 5 – Assigned to roads that provide a high degree of comfort and convenience. Normally roads are double-laned and paved or aggregate surfaced with dust abatement.*

**Road Management Objective (RMO)** - Defines the intended purpose of an individual road based on Management Area direction and access management directives. Road management objectives contain design criteria, operation criteria and maintenance criteria. Long-term and short-term roads have RMOs.

**Roadless Area** - An area of undeveloped public land where there are no improved roads maintained for motor vehicles.

**Root Collar** - The area of a tree, slightly above ground, that transitions from the roots to the bole. This area generally flares out at the roots.

**ROD** - see Record of Decision

**ROS** - see Recreation Opportunity Spectrum

**Rotation** - The number of years required to establish and grow timber crops to a specified condition of maturity.

**Runoff** - The portion of precipitation on a drainage area that is discharged from that area in stream channels.

**Salvage Harvest** - Removal of dead or dying trees.

**Sanitation Salvage** - The removal of dead, damaged or susceptible trees primarily to prevent the spread of pests or disease and promote forest health.

**Sawtimber (Sawlog)** - Trees that are nine inches in diameter at breast height or larger that can be made into lumber.

**Scale** - The degree of resolution at which ecosystems are observed and measured. Also can be defined as: The volume of logs determined by length and diameter measurements.

**Scoping** - The ongoing process to determine public opinion, receive comments and suggestions, and determine issues during the environmental analysis process. Scoping may involve public meetings, telephone conversations, or letters.

**Sedge** - A family of plants with solid stems found in marshy areas.

**Seen Landscape** - Those areas visible from the most frequently used travelways (boat route, recreation road, or trail) or use area (recreation cabin or anchorage).

**Seldom-seen or Not-seen Landscape** - Those areas not visible from the most frequently used travelways (boat route, recreation road, or trail) or use area (recreation cabin or anchorage).

**Selection Cutting** - A silvicultural system used to create or maintain uneven-aged stands, usually by the periodic removal of groups of trees or individual trees. Selection cutting is undertaken to provide periodic harvests while maintaining full residual stand growth rates. Selection cutting attempts to develop a balanced uneven-aged stand structure, including the encouragement of regeneration by providing the cultural measures needed for tree growth and seedling establishment. The selection system refers to the programs used to create or maintain the stand, while the selection method refers to the way in which a stand is regenerated. The cutting usually involves a mixture of regeneration and improvement cuts.

**Selective Cutting** - A system in which groups of trees or individual trees are removed periodically from the forest based on economic criteria aimed at maximizing logging revenues rather than the need to ensure satisfactory regeneration or to maintain stand growth rates and

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quality of timber production. The term is often used synonymously with selection cutting, but this is seldom correct because the management goals of the two systems differ. Selective cutting provides periodic revenues from the forest but is not specifically designed to improve the growing conditions of the trees remaining. The practice of selective cutting has historically resulted in the selection of the biggest and best trees for cutting, leaving behind damaged trees and degraded ecosystem functions.

**Sensitive Species** - Plant or animal species which are susceptible to habitat changes or impacts from activities. The official designation is made by the USDA Forest Service at the Regional level and is not part of the designation of Threatened or Endangered Species made by the US Fish and Wildlife Service.

**Sensitivity Level** - A map inventory that measures people's concern for the scenic quality of the National Forests. The Tongass National Forest assigned sensitivity levels to land areas viewed from anchorages, plane and boat routes, roads, trails, public-use areas, and recreation cabins in 1980.

1. *Level I: Includes all seen areas from primary travel routes, use areas, and water bodies where at least three-fourths of the Forest visitors have a major concern for scenic quality.*
2. *Level II: Includes all seen areas from primary travel routes, use areas, and water bodies where at least one-fourth of the Forest visitors have a major concern for scenic quality.*
3. *Level III: Includes all seen areas from secondary travel routes, use areas, and water bodies where less than one-fourth of the Forest visitors have a major concern for scenic quality.*

**Seral** - The stage of succession of a plant or animal community that is transitional. The seral stage will give way to another plant or animal community that represents a further stage of succession if left alone.

**Shell Midden** - A term referring to shell and bone that have been discarded after harvest and processing for subsistence use.

**Shovel Logging** - see Logging Systems

**Side-slope Break** - The abrupt change in slope gradient defining the upper limit of stream channel incision.

**Silviculture** - The art and science that promotes the growth of single trees and the forest as a biological unit.

**Silvicultural Prescription** - Detailed direction about methods, techniques, timing, and monitoring of vegetative treatments. A prescription is prepared by a silviculturist who uses interdisciplinary input to best achieve established objectives, direction, and requirements for land managed by the USDA Forest Service.



**Silvicultural System** - The cultivation of forests; the result is a forest of a distinct form. Silvicultural systems are classified according to harvest and regeneration methods and the type of forest that results.

**Site Index** - A measure of the relative productive capacity of an area for growing wood. Measurement of site index is based on height of the dominant trees in a stand at a given age.

**Site Preparation** - The general term for removing unwanted vegetation, slash, roots, and stones from a site before reforestation. Naturally occurring wildfire, as well as prescribed fire can prepare a site for natural regeneration.

**Size Class** - One of the three intervals of tree stem diameters used to classify timber in the Forest Plan data base. The size classes are: Seedling/Sapling (less than 5 inches in diameter); Pole Timber (5 to 7 inches in diameter); Sawtimber (greater than 7 inches in diameter).

**Skidding** - Hauling logs by sliding, not on wheels, from stump to a collection point.

**Skyline Logging** - A logging system used to remove timber from steep slopes. Logs are brought up-slope on a suspended cable, or skyline. Since the weight of the log is completely or partially supported by the cable, there is little disturbance to soil or other vegetation.

**Slash** - The residue left on the ground after timber cutting or left after a storm, fire, or other event. Slash includes unused logs, uprooted stumps, broken or uprooted stems, branches, bark, leaves, etc. Certain amounts of slash provide important ecosystem roles, such as soil protection, nutrient cycling, and wildlife habitat.

**Slump** - A landslide where the underlying rock masses tilt back as they slide from a cliff or escarpment.

**Snag** - A standing dead tree. Snags are important as habitat for a variety of wildlife species and their prey.

**Soil Compaction** - The reduction of soil volume. The weight of heavy equipment, for example, on soils can compact the soil and thereby change it in some ways, such as in its ability to absorb water.

**Soil Productivity** - The capacity of a soil to produce a specific crop. Productivity depends on adequate moisture and soil nutrients, as well as favorable climate.

**Soil Water** – Water held in soil pores with a strength dependant on pore size.

**Sortyard** - A location used to sort grades, types, and size of logs.

**Sound Wood** - Timber that is in solid, whole, good condition. Sound wood is free from damage or decay.

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**Special Use Permit** - A permit issued to an individual or group by the USDA Forest Service for use of National Forest land for a special purpose. Examples include a Boy Scout Jamboree or a mountain bike race.

**Split Yarding** - The process of separating the direction of timber harvest yarding into opposite directions.

**Stand** - A group of trees that occupies a specific area and is similar in species, age, and condition.

**Standards and Guidelines** - Requirements found in a Forest Plan which impose limits on natural resource management activities, generally for environmental protection. Forest Plan standards must be met; while guidelines direct the conditions that management should strive for (standard - A course of action or level of attainment required by the forest plan to promote achievement of goals and objectives; guideline - A preferred or advisable course of action or level of attainment designed to promote achievement of goals and objectives).

**State Historic Preservation Office (SHPO)** - State office that administers federal and state programs for heritage resources. The Forest seeks concurrence from SHPO for all NEPA projects.

**State Selection** - Application by Alaska Department of Natural Resources to the Bureau of Land Management for conveyance of a portion of the 4,000,000 acre State entitlement from vacant and unappropriated National Forest System lands in Alaska, under the Alaska Statehood Act.

**Stewardship** - The administration of land and associated resources in a manner that enables their passing on to future generations in a healthy condition.

**Stex Volume** - Net volume generated for the NEPA Economic Analysis Tool (NEAT) and derived from stand exam plots and silvicultural prescriptions.

**Stocking Level** - The number of trees in a stand as compared to the desirable number of trees the stand should contain to meet specific objectives.

**Storage (of roads)** - Remove or bypass all drainage structures to restore natural drainage patterns, add water bars as needed to control run-off, and revegetate. This is intended to be the primary maintenance strategy applied on intermittent use roads during their storage cycle. Bridges and culverts on streams are completely removed to restore natural drainage patterns in this strategy. Cross drains and ditch relief culverts will be bypassed with deep water bars but left in place to minimize the cost of reusing these roads in the future. Due to the isolated nature of the road system, which makes maintenance costly and difficult, and their infrequency of use, storage is the most

appropriate strategy for these roads. Maintenance Level 1, storage and basic custodial maintenance, is assigned. Storage eliminates car and truck use, and discourages use by other motor vehicles (CZMA MOU #00MOU-111001-026).

**Stream Classes** - A means to categorize stream channels based on their fish production values. Also known as Aquatic Habitat Management Unit (AHMU) class. There are four stream classes defined by the Forest Plan (7-39 and 40):

1. *Class I: Streams and lakes with anadromous or adfluvial fish habitat; or high-quality resident fish waters, or habitat above fish migration barriers known to be reasonable enhancement opportunities for anadromous fish.*
2. *Class II: Streams and lakes with resident fish or fish habitat and generally steep (6 to 25 percent or higher) gradients where no anadromous fish occur, and otherwise not meeting Class I criteria.*
3. *Class III: Streams are perennial and intermittent streams that have no fish populations or fish habitat, but have sufficient flow or sediment and debris transport to directly influence downstream water quality or fish habitat capability. These streams have bankfull widths greater than 1.5 meters (5 feet) and have channel incision into the surrounding hillslope greater than 5 meters (15 feet).*
4. *Class IV: Intermittent, ephemeral, and small perennial channels with insufficient flow or sediment transport capabilities to directly influence downstream water quality or fish habitat capability. Class IV streams do not have the characteristics of Class I, II, or III streams, and have a bankfull width of at least 0.3 meters (1 foot). These streams generally are shallowly incised into the surrounding hillslope. Incision depth may be determined from side-slope angle and length. Incisions from 3 to 5 meters in depth may be categorized as either Class III or Class IV depending on other stream characteristics.*
5. *Nonstreams. Rills and other watercourses, generally intermittent and less than 1 foot in bankfull width, showing little or no incision into the surrounding hillslope or evidence of scour.*

**Stream Discharge** - Flow rate of water in a stream channel.

**Stream Order** - First-order streams are the smallest unbranched tributaries; second-order streams are initiated at the point where two first-order streams meet; third-order streams are initiated by the point where two second-order streams meet, and so on.



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**Stringer** - A large log to be used as part of a bridge.

**Structure** - How the parts of ecosystems are arranged, both horizontally and vertically. Structure might reveal a pattern, or mosaic, or total randomness of vegetation.

**Stumpage** - Standing timber as viewed by a commercial cutter or the value of the timber as it stands un-cut in terms of an amount per unit area.

**Subsistence** - Section 803 of the Alaska National Interest Lands Conservation Act defines subsistence use as “the customary and traditional uses by rural Alaska residents of wild renewable resources for direct, personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of nonedible by-products of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade.”

**Subsistence Use Area** - Important Subsistence Use Areas include the “most reliable” and “most often hunted” categories from the Tongass Resource Use Cooperative Survey (TRUCS) and from subsistence survey data from the Alaska Department of Fish and Game, the University of Alaska, and the USDA Forest Service, Region 10. Important use areas include both intensive and extensive use areas for subsistence harvest of deer, furbearers, and salmon.

**Subspecies** - An aggregate of similar populations of a species generally inhabiting a geographic subdivision of the range of the species and differing taxonomically (e.g. different size or color) from other populations of the species.

**Subsurface Flow** - Water moving laterally through and beneath the soil mantle.

**Suitable Forest Land** - Forest land for which technology is available that will ensure timber production without irreversible resource damage to soils, productivity, or watershed conditions, and for which there is reasonable assurance that such lands can be adequately restocked, and for which there is management direction that indicates timber production is an appropriate use of the area.

**Suitability** - The appropriateness of certain resource management to an area of land. Suitability can be determined by environmental and economic analysis of management practices.

**Surface Resources** - Renewable resources that are on the surface of the earth, such as timber and forage, in contrast to ground water and minerals which are located beneath the surface.

**Surface Runoff** - See Runoff.

**Sustainability** - The capacity of forests to maintain their health, productivity, diversity, and overall integrity, in the long run, in the context of human activity and use.

**Sustained Yield** - The yield that a renewable resource can produce continuously at a given intensity of management.

**Swale** - A slight, marshy depression in generally level land. A depression in glacial ground moraine.

**Talus** - Rock debris at the base of a cliff.

**Target** - A National Forest's annual goals for accomplishment for natural resource programs. Targets represent the commitment the USDA Forest Service has with Congress to accomplish the work Congress has funded, and are often used as a measure of the agency's performance.

**Temporary Road or Trail** – A road or trail necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not included in a forest transportation atlas (36 CFR 212.1).

**Tentatively Suitable Forest Land** - Forest land that is producing or is capable of producing crops of industrial wood and (a) has not been withdrawn by Congress, the Secretary of Agriculture, or the Chief of the Forest Service; (b) existing technology and knowledge is available to ensure timber production without irreversible damage to soils productivity or watershed conditions; (c) existing technology and knowledge, as reflected in current research and experience, provide reasonable assurance that it is possible to restock adequately within five years of final harvest; and (d) adequate information is available to project responses to timber management activities.

**Terrestrial Ecosystems** - Plant communities that are not dependent on a perpetual source of water to grow.

**Thinning** - A cutting made in an immature stand of trees to accelerate growth of the remaining trees or to improve the form of the remaining trees. Thinning reduces the competition for nutrients, water and sunlight.

*1. Precommercial thinning – Removing trees that are too small to make a merchantable product to improve tree spacing and promote more rapid growth.*

*2. Commercial thinning – Removing trees that have reached sufficient size to be manufactured into a product to improve tree spacing and promote more rapid growth.*

**Threatened Species** - A plant or animal species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Threatened species are identified and

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defined in accordance with the 1973 Endangered Species Act and published in the Federal Register.

**Threshold** - The point or level of activity beyond which an undesirable set of responses begins to take place within a given resource system.

**Tiering** - Eliminating repetitive discussions of the same topic by incorporating by reference. The general discussion in an Environmental Impact Statement of broader scope; e.g., this document is tiered to the Tongass Land and Resource Management Plan, as amended.

**Timber Appraisal** - Establishing the fair market value of timber by taking the selling value minus manufacturing costs, the cost of getting logs from the stump to the manufacturer, and an allowance for profit and risk.

**Timber Stand Improvement (TSI)** - Actions to improve growing conditions for trees in a stand, such as thinning. FP 7-42

**Tongass Land and Resource Management Plan** - Also called the Forest Plan, this document guides the management of Tongass National Forest and establishes management standards and guidelines for of its lands.

**Tongass Resource Use Cooperative Survey (TTRA)** - This act (1990) requires annual appropriations for timber management on the Tongass National Forest, with a provision providing for the multiple use and sustained yield of all renewable forest resources.

**Tongass Timber Reform Act (TTRA)** - This act (1990) requires annual appropriations for timber management on the Tongass National Forest, with a provision providing for the multiple use and sustained yield of all renewable resources.

**Trail** - A route 50 inches or less in width or a route over 50 inches wide that is identified and managed as a trail.

**Transpiration** - Evaporation from within the leaves of plants.

**Travel Management Atlas** - An atlas that consists of a forest transportation atlas and a motor vehicle use map or maps.

**Treatment Area** - The site- specific location of a resource improvement activity.

**Tree Opening** - An opening in the forest created by even-aged silvicultural practices.

**Turbidity** - An indicator of the amount of sediment suspended in water.



**Two-aged Management** - A silvicultural method in which the majority of the trees in a harvest unit are cut in one entry, and the rest (about 20-30 percent of the unit) are left as residual trees, either singly or in patches. The residual trees remain unharvested to provide structural diversity and older-aged trees within the young-growth stand.

**Type Conversion** - The conversion of the dominant vegetation in an area from forested to non-forested or from one species to another.

**Unauthorized Road or Trail** – A road or trail that is not a forest road or trail; or a temporary road or trail; and is not included in a forest transportation atlas.

**Understory** - The trees and woody shrubs growing beneath the overstory in a stand of trees.

**Uneven-aged Management** - Actions that maintain a forest or stand of trees composed of intermingling trees that differ markedly in age. Cutting methods that develop and maintain uneven-aged stands are single tree selection and group selection.

**Unregulated Harvest** - Tree harvest that is not part of the allowable sale quantity (ASQ). The removal of cull or dead material or non-commercial species can also be included. Unregulated harvest also includes volume removed from non-suitable areas for research; to meet objectives other than timber production (such as wildlife habitat improvement); or to improve administrative sites (such as campgrounds).

**Unsuitable Lands** - Forest land that is not managed for timber production. Reasons may be matters of policy, ecology, technology, silviculture, or economics

**Utility Logs** - Those logs that do not meet sawlog grade but are suitable for production of firm, usable pulp chips.

**V-notches** - Deeply incised gullies along some waterways, generally in steep mountainous terrain that would look like a “V” in cross section.

**Value Comparison Unit (VCU)** - First developed for the 1979 Tongass Land Management Plan as distinct geographic areas that generally encompass a drainage basin containing one or more large stream systems. Boundaries usually follow easily recognizable watershed divides. They provide a common set of areas for which resource inventories could be conducted and resource value interpretations made.

**Variety Class** - A way to classify landscapes according to their visual features. This system is based on the premise that landscapes with the

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greatest variety or diversity have the greatest potential for scenic value.

**Vegetation Management** - Activities designed primarily to promote the health of forest vegetation for multiple-use purposes.

**Vegetation Type** - A plant community with distinguishable characteristics.

**Viable Population** - The number of individuals of a species sufficient to ensure the long-term existence of the species in natural, self-sustaining populations that are adequately distributed throughout their range.

**Viewshed** - An expansive landscape or panoramic vista seen from a road, marine waterway, or specific viewpoint.

**Visual Absorption Capacity (VAC)** - The capability of the landscape to visually absorb management activities.

**Visual Quality Objective (VQO)** - A set of measurable goals for the management of forest visual resources.

**Visual Resource** - A part of the landscape important for its scenic quality. May include a composite of terrain, geologic features, or vegetation.

**Volume Class** - Term used to describe the average volume of timber per acre in thousands of board feet (MBF).

**Volume Strata** - Divisions of old-growth timber volume derived from the interpreted timber type data layer (TIMTYP) and the common land unit data layer (CLU). Three volume strata (low, medium, and high) are recognized in the Forest Plan for each Administrative Area.

**WAA** - see Wildlife Analysis Area

**Water Table** - The upper surface of groundwater. The soil below it is saturated with water.

**Water Yield** - The runoff from a watershed, including groundwater outflow.

**Watershed** - The entire region drained by a waterway (or into a lake or reservoir). More specifically, a watershed is an area of land above a given point on a stream that contributes water to the streamflow at that point.

**Wetlands** - Areas that are permanently wet or are intermittently covered with water.

**Wild and Scenic River** - Rivers or sections of rivers designated by congressional action under the 1968 Wild and Scenic Rivers Act or by an act of the Legislature of the state or states through which they flow.

**Wilderness** - Areas designated by congressional action under the 1964 Wilderness Act or subsequent Acts. Wilderness is defined as undeveloped Federal land retaining its primeval character and influence without permanent improvements or human habitation. Wilderness areas are protected and managed to preserve their natural conditions, which generally appear to have been affected primarily by the forces of nature, with the imprint of human activity substantially unnoticeable; have outstanding opportunities for solitude or for a primitive and confined type of recreation; include at least 5,000 acres or are of sufficient size to make practical their preservation, enjoyment, and use in an unimpaired condition; and may contain features of scientific, educational, scenic, or historic value as well as ecologic and geologic interest. On the Tongass National Forest, Wilderness has been designated by ANILCA and TTRA.

**Wildlife Analysis Area (WAA)** - A division of land used by the Alaska Department of Fish and Game for wildlife analysis.

**Wildlife Habitat Diversity** - The distribution and abundance of different plant and animal communities and species within a specific area.

**Windfirm** - Trees not likely to be blown over by the wind. These are usually trees that have been exposed to the wind throughout their life and have developed a strong root system or trees that are protected from the wind by terrain features or other trees. Configuration of harvest units so as not to create an opening that exposes the adjacent stand of timber to windthrow.

**Windthrow (Blowdown)** - The act of trees being uprooted by the wind. In Southeast Alaska, Sitka spruce and hemlock trees are shallow rooted and susceptible to windthrow. There are generally three types of windthrow: endemic where individual trees are blown over; catastrophic where a major windstorm can destroy hundreds of acres; and management related, where the clearing of trees in an area make the adjacent standing trees vulnerable to windthrow.

**Winter Range** - An area used by big game during the winter months, usually at lower elevations. The area is usually smaller and better defined than summer ranges.

**Yarding** - Moving the cut trees from where they fell to a centralized place (landing) for removal from the stand.

**Young Growth** - Forest growth that has regenerated naturally or has been planted after some drastic interference (for example, clearcut harvest, serious fire, windthrow or insect attack) with the previous forest growth. Also referred to as second growth.

Sources include: Tongass Forest Plan, and Dictionary of Forestry



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## List of Final EIS Recipients

The following agencies, organizations, and individuals were provided with a copy of the Scratchings Timber Sale Final Environmental Impact Statement.

### Agencies

Alaska Department of Environmental Conservation  
 Alaska Department of Fish and Game, Division of Subsistence  
 Alaska Department of Fish and Game, Division of Wildlife Conservation  
 Alaska Department of Fish and Game, Division of Forestry  
 Alaska Department of Natural Resources, Division of Water  
 Alaska Department of Natural Resources, Office of Program Management  
 Alaska Department of Natural Resources, Office of Habitat Management and Planning  
 Department of the Army, Engineer District  
 Environmental Protection Agency  
 National Marine Fisheries Service  
 U.S. Army Corps of Engineers  
 U.S. Army Engineer District  
 U.S. Department of the Interior, Office of Environmental Policy  
 U.S. Environmental Protection Agency, Office of Federal Activities  
 U.S. Fish and Wildlife Service  
 USDA Forest Service, Admiralty National Monument  
 USDA Forest Service, Alaska Region  
 USDA Forest Service, Chugach National Forest  
 USDA Forest Service, Craig Ranger District  
 USDA Forest Service, Director of Ecosystem Management  
 USDA Forest Service, Division of Forest Management  
 USDA Forest Service, Hoonah Ranger District  
 USDA Forest Service, Juneau Ranger District  
 USDA Forest Service, Ketchikan – Misty Ranger District  
 USDA Forest Service, National Agricultural Library  
 USDA Forest Service, Petersburg Ranger District  
 USDA Forest Service, Sitka Ranger District  
 USDA Forest Service, Supervisor's Office, Ketchikan  
 USDA Forest Service, Supervisor's Office, Petersburg  
 USDA Forest Service, Supervisor's Office, Sitka  
 USDA Forest Service, Thorne Bay Ranger District  
 USDA Forest Service, Tongass National Forest  
 USDA Forest Service, Wrangell District  
 USDA Forest Service, Yakutat Ranger District  
 USDA Natural Resources Conservation Service, National Environmental Coordinator

## 4 References and Lists

### Libraries

Colorado State University Library  
Craig Public Library  
Douglas Public Library  
Elfin Cove Public Library  
Haines Public Library  
Hollis Public Library  
Hyder Public Library  
Kake Community Library  
Kasaan Community Library  
Ketchikan Public Library  
Kettleson Memorial Library  
Mendenhall Valley Public Library  
Pelican Public Library  
Petersburg Public Library  
Skagway Public Library  
Tenakee Springs Public Library  
Thorne Bay Community Library  
University of Minnesota, Forestry Library

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### Organizations and Businesses

Alaska Forest Association  
Alaska Forest Products  
Cape Fox Corporation  
Cascadia Wildlands Project  
Central Council of Tlingit and Haida Indian Tribes  
Craig Community Association  
Earthjustice  
Greenpeace  
Haida Corporation  
Hydaburg Cooperative Association  
Kavilco, Inc.  
Ketchikan Indian Corporation  
Klawock Cooperative Association  
Klawock Heenya Corporation  
Klawock Tribal Government  
Natural Resources Defense Council  
Sealaska Corporation  
Sealaska Heritage Institute  
Shaan-Seet, Inc.  
Sierra Club, Juneau Group  
Sitka Conservation Society  
Southeast Alaska Conservation Council  
The Wilderness Society  
Virginia Tech Department of Fisheries and Wildlife  
Whitestone Logging, Inc.

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**Public  
Officials and  
Offices**

Alaska Land Use Council  
City of Coffman Cove  
Ketchikan Gateway Borough

**Individuals**

Cody Burgess  
John Clifton  
Joe Cook  
Natalie Dawson  
Barnet Freedman  
John Hannon  
Ben Mitchell  
Frank and Pat Roppel  
Tim Sanders  
B. Sachau  
George Woodbury

**List of Final EIS Notification**

The following agencies, organizations, and individuals were sent a letter notifying them of the website location of the Scratchings Timber Sale Final Environmental Impact Statement.

Advisory Council on Historic Preservation  
Alaska Board of Fisheries  
Alaska Department of Fish and Game, Sport Fishing Division  
Alaska Department of Natural Resources  
Alaska Department of Transportation  
Federal Aviation Administration  
Federal Highway Administration  
National Oceanic and Atmospheric Administration  
U.S. Army Engineer, Pacific Ocean Division  
U.S. Coast Guard  
U.S. Department of Energy  
USDA APHIS PPD/EAD  
USDA Forest Service, Wild and Scenic Rivers Program  
Wrangell Public Library  
Juneau Empire  
3-D Logging  
Alaska Center for the Environment  
Center for Biological Diversity  
Douglas Indian Association  
Forest Conservation Council  
Glacier Grotto  
Hoonah Indian Association  
Meridian Environmental  
MSM Resource

## 4 References and Lists

Petersburg Indian Association  
Point Baker Community Council  
Port Protection Community Association  
Prince of Wales Conservation League  
Sharp Lumber  
Sierra Club, Alaska Chapter  
Sitka Tribe of Alaska  
Tech Cominco  
Tongass Conservation Society  
TRUCO  
Waterfall Resort  
WR Jones & Son Lumber Company  
Wrangell Cooperative Association  
Yak-Tat-Kwaan Inc.  
Yakutat Tlingit Tribe  
Angoon Community Association  
Chilkoot Indian Association  
City of Craig  
City of Hydaburg  
City of Kasaan  
City of Klawock  
City of Sitka  
City of Thorne Bay  
Community Council of Hollis  
Community of Naukati West  
Community of Whale Pass  
Edna Bay Community  
Honorable Albert Kookesh  
Honorable Don Young  
Metlakatla Indian Community  
Office of the Governor  
Organized Village of Kasaan  
Organized Village of Kake  
Organized Village of Saxman  
Senator Lisa Murkowski  
Senator Ted Stevens  
Chuck Bateman  
Lonnie Collins  
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# **Appendix A**

## **Reasons for Scheduling the Environmental Analysis of the Scratchings Timber Sale**



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## Introduction

This appendix provides an explanation of the rationale for a specific timber harvest project and its importance to the multi-year timber program on the Tongass National Forest. To accomplish this, the following questions are answered:

- Why is timber from the Tongass National Forest being offered for sale?
- How does the Forest Service develop forecasts about future timber market demand?
- What steps must be completed to prepare a sale for offer?
- How does the Forest Service maintain an orderly and predictable timber sale program?
- How does the Forest Service decide where timber sale projects should be located?

Coordinated timber sale planning is essential for meeting the goals of the Tongass Land and Resource Management Plan (Forest Plan) and to provide an orderly flow of timber to local industry. To determine the volume of timber to offer each year, the Forest Service can look to current market conditions and the level of industry operations. However, the planning process for timber harvest projects requires the Forest Service to rely on projections of future harvest levels to decide how many timber sale projects to begin each year. This document explains how the Forest Service uses information about future markets and past experience with timber sale planning to determine the volume of timber that needs to be started through this process each year. This appendix relies heavily on the current annual timber demand analysis and the most recent timber sale schedule.

## Why is Timber from the Tongass National Forest Being Offered for Sale?

### National Legislation

On a national level, the legislative record is clear about the role of the timber program in the multiple-use mandate of the national forests. One of the original objectives for creation of national forests was to provide natural resources, including timber, for the American public. The Organic Act of 1897 (partially repealed in 1976) directed the agency to manage the forests in order to "improve and protect the forest ... [and] for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of the citizens of the United States" (emphasis added). The Multiple-Use Sustained Yield Act of 1960 directs the Forest Service to

## **A Reasons for Scheduling the Environmental Analysis**

administer federal lands for “outdoor recreation, range, timber, watershed, and wildlife and fish purposes.”

The National Forest Management Act (NFMA) of 1976 states that “the Secretary of Agriculture...may sell, at not less than appraised value, trees, portions of trees, or forest products located on National Forest System Lands.” Although the heart of the Act is the land management planning process for national forests, the Act also sets policy direction for timber management and public participation in Forest Service decision making. Under NFMA, the Forest Service was directed to “limit the sale of timber from each national forest to a quantity equal to or less than a quantity which can be removed from such forest annually in perpetuity on a sustained-yield basis.”

The NFMA directs the Forest Service to complete land management plans for all units of the National Forest System. Forest plans are developed by an interdisciplinary team to provide for the coordination of outdoor recreation, range, timber, watershed, wildlife and fish, and wilderness. Forest plans designate areas of national forest where different management activities and uses are considered appropriate including those areas suitable for timber harvest.

### **Alaska-specific Legislation**

Timber from the Tongass National Forest is being offered for sale as part of the multiple-use mission of the Forest Service identified in the public laws guiding the agency. In addition, Alaska-specific legislation and the Tongass Forest Plan direct the Forest Service to seek to provide timber to meet market demand, subject to certain limitations.

The Alaska National Interest Lands Conservation Act (ANILCA) and the Tongass Timber Reform Act (TTRA) provide direction on the issue of Tongass timber supply. Section 101 of TTRA amended the ANILCA timber supply mandate and fixed budget appropriations and replaced them with the following text in Section 705 (a):

“Sec. 705. (a) Subject to appropriations, other applicable law, and the requirements of the National Forest Management Act of 1976 (P.L. 94-588); except as provided in subsection (d) of this section, the Secretary shall, to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources, seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the annual market demand from such forest for each planning cycle.”

### **Tongass National Forest Land and Resource Management Plan (Forest Plan, as amended)**

The Record of Decision for the Tongass Land Management Plan Revision (Forest Plan) was signed by the Alaska Regional Forester in 1997. The Forest Plan incorporated new resource information and scientific studies and reflected an extensive public involvement process.



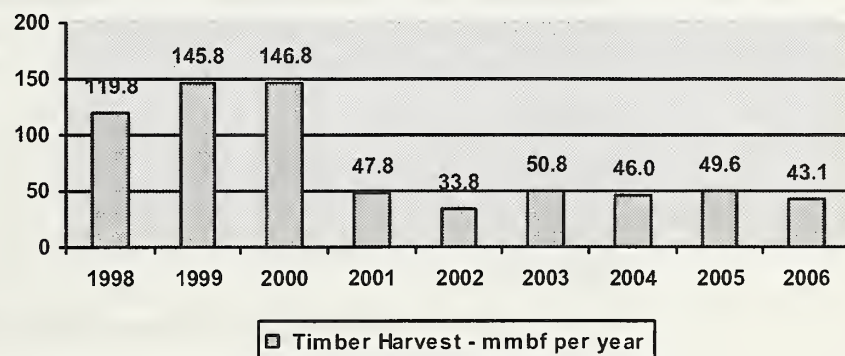
## Reasons for Scheduling the Environmental Analysis A

There was direction to supplement the 1997 Final EIS to evaluate and consider roadless areas within the Tongass for recommendation as potential wilderness areas as part of the March 2001 US District Court decision on litigation on the 1997 Forest Plan. The Record of Decision for the Supplemental Environmental Impact Statement was signed in February 2003. The No-action Alternative was selected; no additional lands were recommended for Wilderness designation and no changes were made to the Land Use Designations (LUDs) from the 1997 Record of Decision. The 1997 Forest Plan defines appropriate activities within each LUD. Approximately 74 percent of the Tongass is allocated to LUDs where commercial timber harvest is not allowed.

Amendments have been made to the 1997 Forest Plan, primarily to modify small Old-growth Habitat Reserves to meet Forest Plan criteria. These amendments have been accomplished through environmental analysis and are documented in decision documents. Due to those modifications, LUDs in certain areas have changed from development LUDs that allow timber harvest to Old-growth Habitat LUD or changed from the Old-growth Habitat LUD to development LUDs. Since the plan was signed in 1997, these amendments have affected two percent of the acres designated as suitable commercial timber by re-designating them as Old-growth Habitat LUD where timber harvest is not allowed.

The effects to resources in the Final EIS for the 1997 Forest Plan were analyzed as if the full timber harvest allowed under each alternative would occur over the next decade and into the future. In that way, the Forest Plan analysis displayed the maximum environmental effects that could be reasonably foreseen. Since substantially less timber volume and acres have been harvested since the 1997 Forest Plan revision than was analyzed, the effects on resources are expected to be less than projected in the 1997 Final EIS. The environmental effects analysis in the Forest Plan projected that up to 267 MMBF and 10,200 acres could be harvested per year based on the suitable forest lands where timber harvest is compatible with the Forest Plan Land Use Designations. Forest Plan monitoring indicates that average annual harvest has been considerably less than that amount (Figure A-1).

Figure A-1  
Tongass Timber Harvest, 1998-2006



## **A Reasons for Scheduling the Environmental Analysis**

On August 5, 2005, the Ninth Circuit Court of Appeals ruled that a misinterpretation of the Brooks and Haynes 1997 draft timber demand projections rendered the 1997 Record of Decision for the Tongass Land Management Plan Revision arbitrary and capricious. The court of appeals remanded the matter for further proceedings consistent with the court's opinion (Natural Resources Defense Council v. U.S. Forest Service). The process of remedying the shortcomings identified by the court of appeals is in progress with a Forest Plan Amendment Draft EIS released in January 2007. However, there are lengthy time periods involved in clearing timber volume through the NEPA, administrative appeals and litigation processes. Clearing a timber sale project through the NEPA process is an important step in the process the Alaska Region uses to comply with this mandate. Delaying the completion of this and other site-specific projects until after a decision on the Forest Plan Amendment is made would undermine the Forest Service's ability to keep an even-flow of economical timber supply. This project will be reviewed for consistency with the decision on the Forest Plan Amendment.

### **Allowable Sale Quantity (ASQ)**

The ASQ serves as an upper limit on the amount of timber that may be offered for sale each decade as part of the regularly scheduled timber sale program. The Record of Decision for the 1997 Forest Plan states:

“The maximum amount of timber that could be harvested (Allowable Sale Quantity or ASQ) during the first decade of the Forest Plan implementation is an average of 267 MMBF per year. A timber volume level less than the ASQ is likely to be offered over the next few years, given current market conditions, the transition that both the timber industry and the Forest Service are experiencing, and the current amount of appeals and litigation.

The ASQ is the maximum amount of sustainable timber harvest on suitable forest lands allocated to development by the Forest Plan, in accordance with its standards and guidelines and management direction. It consists of two separate Non-Interchangeable Components (NICs) called NIC I and NIC II. The NIC I component includes lands that can be harvested with normal logging systems including helicopter logging with less than  $\frac{3}{4}$  mile yarding distance. The NIC II component includes land that has high logging costs due to isolation or special equipment requirements. Most of these NIC II lands are presently considered economically and technically marginal.

There are two purposes of partitioning the ASQ into two components: (1) to maintain the economic sustainability of the timber resource by preventing the over-harvest of the best operable ground, and (2) to identify that portion of the timber supply that may not be harvested because of marginal economic conditions.

With regard to timber production sustainability, the Record of Decision for the 1997 Forest Plan further states:

## **Reasons for Scheduling the Environmental Analysis A**

“The timber resource will be managed for production of sawtimber and other wood products from timberlands available for sustainable timber harvest, on an even-flow, sustained-yield basis and in an economically efficient manner. The Tongass National Forest will seek to provide a timber supply sufficient to meet the annual market demand for Tongass National Forest timber and the market demand for the planning cycle.

The Tongass National Forest will continue to allow timber harvest while maintaining sustained yield and multiple-use goals. The forest-wide standards and guidelines for timber include general direction to “[e]nsure that silvicultural systems other than clearcutting are considered through an appropriate project level analysis process.” However, uneven-aged management systems will be limited to areas where yarding equipment suited to selective logging can be used.

### **Roadless Area Conservation Rule**

The January 2001 Roadless Area Conservation Rule prohibited most timber harvest and road construction in inventoried roadless areas on National Forest System lands.

The Roadless Area Conservation Rule (1/12/2001) has been the subject of several lawsuits. In the most recent ruling (9/20/06), the court re-instituted the rule as it appears in the 2004 version of 36 CFR Parts 200 to 299. The rule in effect includes the text at 294.14(d): "this subpart does not apply to road construction, road reconstruction, or the cutting, sale or removal of timber in inventoried roadless areas on the Tongass National Forest".

An analysis of the effects to roadless areas within the project area has been included as part of the analysis for this project. This project is consistent with agency policy and procedures and has been designed to meet the management direction, goals and objectives, and standards and guidelines in the Forest Plan.

## **How does the USDA Forest Service Develop Forecasts about Future Timber Market Demand?**

Consistent with the provisions of the Tongass Timber Reform Act, the Tongass National Forest makes two determinations on volume to be offered. The first, “annual market demand” is an estimate on volume to be offered for the current year, based on a forecast of annual timber market demand. The second is “planning cycle market demand” forecasts potential timber volume needs over the life of the Forest Plan. Annual market demand is analogous to assessing industry performance in the short-term. The general approach is to consider the timber requirements of the region’s sawmills at different levels of operation and under different assumptions about market conditions and technical processing capability.



# A Reasons for Scheduling the Environmental Analysis

## Annual Market Demand

The annual market demand forecast is a methodology used to set the short-term goals for the Tongass timber sale program – it is the projected volume of Tongass timber needed to meet annual market demand. The estimated annual market demand is the volume the Forest plans to offer for sale in the current year pending sufficient funding.

The reports Responding to the Market Demand for Tongass Timber (Morse, 2000) and Tongass National Forest Timber Sale Procedures (Morse, 2000a) document the formulas and procedures used in forecasting annual market demand. The Morse methodology originally used the projected harvest from the final 1997 Brooks and Haynes report. Currently calculations of the annual demand use the annual projected harvest from Brackley 2006 as one of the inputs. In addition, the methodology is self-correcting based on actual experience and considers such factors as mill capacity, utilization, and volume under contract. To the extent that actual harvest is lower than projected harvest, the inventory of timber under contract builds up and the demand for new timber decreases, as long as economic volume is available. The procedures are designed to be flexible given the uncertainty associated with forecasting market conditions. This is especially difficult in Southeast Alaska because of the structural transformation underway in the timber industry. The methodology accounts for the fact that the Forest Service timber sale program cannot quickly respond to market fluctuations, and allows the industry to accumulate adequate volume under contract. The methodology includes provisions to monitor industry behavior and includes ways to adjust timber sale program levels to reflect harvest activity with some specific criteria for action. These assumptions provide a basis for estimating the volume of timber likely to be processed by the industry as a whole in any given year. The volume of timber likely to be purchased is equal to the volume needed to make up any inventory shortfall in addition to the volume likely to be harvested in the coming year.

To keep the annual demand current, the timber sale plan is updated each fiscal year for each ranger district, whereby the current year is dropped at the end of the fiscal year and a new year is added. These plans from the ranger districts are then consolidated into the Tongass Timber Sale Plan. In the past, the Tongass prepared a 10-year timber sale plan. For several reasons, the Tongass now uses a 5-year timber sale plan, which is consistent with Forest Service Manual 2430. These reasons include the difficulty to project changing market conditions, the outcome of timber harvest decisions affected by litigation, the time it will take to remedy the Forest Plan to be consistent with the court's opinion (*Natural Resources Defense Council v. U.S. Forest Service*) and the completion of the amendment to the Forest Plan currently in progress. This 5-year plan is based on completed and ongoing environmental analyses and will contain more-accurate information to purchasers and provide a plan that is easier to adjust in response to changing market conditions.

## Reasons for Scheduling the Environmental Analysis A

The volume that needs to be offered to meet the “annual market demand” for FY 07 is projected to be 131 MMBF. This figure was calculated using the Brackley 2006 “expanded lumber scenario” which allows for sufficient timber volume for the existing Southeast Alaska sawmills to operate efficiently. The spreadsheet displaying how this demand is calculated and a summary of the factors used in these calculations are in the project record.

The planned annual timber volume offer could include a combination of new, previously offered, and reconfigured timber sales. Both green timber and salvage will be components of the program. Offerings will consist of those targeted for Small Business qualified firms, as well as a portion of the volume being made available for the open market.

### **Market Demand over the Planning Cycle**

There have been a number of “planning cycle market demand” analyses prepared for Tongass timber program, including three series prepared by Brooks and Haynes (1990, 1994, and 1997) for the Forest Service’s Pacific Northwest Research (PNW) Station that are the 1997 demand projections were used in the preparing the 1997 Tongass Forest Plan.

An update of the “planning cycle market demand” assessment by Brooks and Haynes (1997) was requested from the US Forest Service. In 2006, the PNW Research Station published new harvest projections (Brackley et al. 2006). The Brackley 2006 projections contain four scenarios, as opposed to the three in Brooks and Haynes (1997). These four scenarios include: 1) limited lumber production which represents the current situation where timber supply is limited; 2) expanded lumber production which represents the current industry in southeast Alaska operating without the current supply limitations; 3) medium integrated industry which represents an expansion of the current industry capacity and better utilization of forest products removed from public timber sales; and 4) high integrated industry which represents full utilization of forest products. More information about these scenarios is in the Forest Plan Amendment Draft EIS (January 2007).

The 2006 projections did not require changes to the basic methodology from the procedure outlined in Morse (2000a) except to use the projections from Brackley, 2006 rather than the 1997 Brooks and Haynes projections (Alexander, 2006).

# A Reasons for Scheduling the Environmental Analysis

**Table A-1. Projected Tongass National Forest Timber Harvest— in Million Board Feet (MMBF); (Alexander, 2006<sup>1</sup>)**

Year	1 - Limited lumber scenario	2 - Expanded lumber scenario	3 -Medium integrated scenario	4 - High integrated scenairo
2007	49.8	61.9	67	67
2008	49.8	66.4	139	139
2009	51.3	72.4	151	151
2010	52.8	78.5	166	166
2011	52.8	84.5	184	184
2012	54.3	90.5	204	286
2013	55.8	98.1	204	291
2014	57.3	105.6	204	295
2015	58.9	113.2	204	299
2016	58.9	122.2	204	303
2017	60.4	131.3	204	308
2018	61.9	140.3	204	312
2019	63.4	150.1	204	317
2020	64.9	163.0	204	325
2021	66.4	175.0	204	333
2022	67.9	187.1	204	342
2023	69.4	200.7	204	351
2024	70.9	215.8	204	360
2025	72.4	230.9	204	370

<sup>1</sup> Annualized calculation to fulfill derived demand scenarios from Brackley et al. (2006). This table was created using annualized values provided by Dr. Allen Brackley (personal communication, Nov 29 2006) from the model used to develop derived demand estimates in Brackley et al. (2006a). The values for Limited Lumber Scenario and Expanded Lumber scenarios reported in this table have been adjusted to include low quality material not included in the demand projections and include saw logs, cedar export, and utility (chip) volumes available from sawmill production. The Medium and High Integrated Scenarios are not adjusted and include saw logs, cedar exports, chip volumes, low-grade material, and utility in Brackley et al. (2006)

Both the “annual market demand” and the “planning cycle market demand” projections are important for timber sale program planning purposes. They provide guidance to the Forest Service to request budgets, to make decisions about workforce and facilities, and to indicate the need to begin new environmental analysis for future program offerings. They also provide a basis for expectations regarding future harvest, and thus provide an important source of information for establishing the schedule of probable future sale offerings. The weight given to the projections will vary depending on a number of factors, such as how recently they were done and how well they appear to have accounted for recent, site-specific events in the timber market.



## What Steps Must Be Completed to Prepare a Sale for Offer?

The Tongass National Forest's timber sale program is complex. A number of projects are underway at any given point in time, each of which may be in a different stage of planning and preparation. A system of checkpoints, or "gates", helps the Forest Service track the accomplishments of each stage of a project from inception to contract termination.

### **Gate 1 – Initial Planning of Timber Sale Project**

A Timber Sale Project Plan, often referred to as a Position Statement, is a brief analysis of the project area with the intent of determining the feasibility of a potential timber sale. After the Position Statement is developed, the Forest Service decides whether the project area merits continued investment of time and funds in sale planning.

### **Gate 2 – Project Analysis, Sale Area Design, and Decision**

This step is commonly referred to as the "NEPA" phase and includes field work, public scoping, analysis, draft disclosure of the effects of the project on the environment, public comment, final analysis and disclosure, decision, and potentially administrative appeals and litigation. Gate 2 activities must be completed before a sale is awarded. Legislation, policy changes, and appeals and litigation have recently extended completion of some projects for a much longer timeframe, often doubling the desired time frame.

### **Gate 3 – Preparation of a Timber Sale**

During this step, the information and direction included in the decision document from Gate 2 is used to layout units and design roads on the ground. Additional site-specific information is collected at this time. In order to maintain an orderly flow of sales, Gate 3 activities need to be complete before a sale is advertised.

### **Gate 4 – Advertise a Timber Sale**

The costs and value associated with the timber sale designed in Gate 3 are appraised and packaged in a timber sale contract. The contract is a legally binding document that tells a prospective timber sale purchaser how the sale must be harvested to conform to the project decision document. This step occurs during the final year of the project development and culminates with the advertisement of the project for sale.

### **Gate 5 – Bid Opening**

Gate 5 is completed with the opening of bids for the project. If a bid is submitted, contractual provisions govern when the award of the sale takes place, when the sale will be completed (contract length and operation season), and how timber removal is to occur.

# **A Reasons for Scheduling the Environmental Analysis**

## **Gate 6 – Award a Timber Sale Contract**

Gate 6 is the formal designation of a contract between a bidder and the Forest Service.

## **How does the USDA Forest Service Maintain an Orderly and Predictable Timber Sale Program?**

### **Pools of Timber (Pipeline Volume)**

As discussed earlier, the Forest Service tracks the accomplishment of the different steps of development of each timber sale with the Gate System process (Forest Service Handbook 2409.18). From a timber sale program standpoint, it is also necessary to track and manage multiple projects through a “pipeline” of time as projects collectively move through the Gate System. Because of the timeframes needed to accomplish a given timber sale and the complexities inherent in timber sale project and program development, it is necessary to track various timber sale program volumes from Gate 1 through Gate 6.

The goal of the Tongass National Forest is to provide an even flow of timber sale offerings on a sustained-yield basis to meet market demand. In recent years, this has been difficult to accomplish due to a combination of uncertainties such as delays related to appeals and litigation; changing economic factors, such as rapid market fluctuations; and industry-related factors, such as changes in timber industry processing capabilities. To achieve an even flow of timber sale offerings, ‘pools’ of volume in various stages of the Gate System are maintained so volume offered can be balanced against current year demand and market cycle projections.

Today, upward trends in demand are resolved by moving out-year timber projects forward, which may leave later years not capable of meeting the needs of the industry. In other instances, a number of new projects are started based on today’s market but will not be available for a number of years. By the time the added projects are ready for offer, the market and demand for this volume may have changed. Three pools of timber volume are tracked to achieve an even flow of timber sale offerings.

The objective of the timber pools concept is to maintain sufficient volume in preparation and under contract to be able to respond to yearly fluctuations in a timely manner. Refer to Table A-2, which displays the current estimated volume in each pool, as well as the goal for volume to be maintained in each pool, based on historic patterns. Based on historic patterns, the Tongass has established a goal for the volume to be maintained in each of the timber pools. Appeals and litigation can cause timber sale projects to be reevaluated to ensure they meet current standards and direction, which can cause delays in making projects available to move through the pools, thereby not fully meeting the goals for volumes in each pool.

# Reasons for Scheduling the Environmental Analysis A

## **Pool 1 - Timber Volume Under Analysis (Gate 1 and Gate 2)**

Volume in Gate 1, the initial planning step, represents a large amount of volume, but represents a relatively low investment in each project. This relatively low investment level offers the timber program manager a higher degree of flexibility and thus, does not greatly influence the flow of volume through the pipeline.

Gate 2, timber volume under environmental analysis, includes sales being analyzed and undergoing public comment through the NEPA process. This pool includes any project that has started the scoping process through those projects ready to have a decision issued. In addition, tracking how much volume is involved in appeals or litigation may be necessary to determine possible effects on the flow of potential timber sales. Volume in appeals and litigation is tracked as a subset of this pool as necessary (Table A-3).

Based on historic patterns, the Tongass has established a goal for the pipeline volume to be maintained in each of the timber pools. The goal for Pool 1 is to be maintained at approximately 4.5 times the amount of the projected harvest to account for projects at various stages of analysis. That goal reflects a number of factors which can lead to a decrease in volume available, such as a decision in Gate 1 to drop further analysis in a particular planning area (called the “no go” decision), a falldown in estimated volume between Gate 1 and Gate 2, and volume not available for harvest due to appeals or litigation.

## **Pool 2 - Timber Volume Available for Sale (Gates 3, 4 and 5)**

Timber volume available for sale includes sales for which environmental analysis has been completed, and have had any administrative appeals and litigation resolved. Enough volume in this pool is needed to be maintained to be able to schedule future sale offerings of the size and configuration that best meets market needs in an orderly manner.

As a matter of policy and sound business practice, the Forest Service announces probable future sale offerings through the Periodic Timber Sale Announcement. Recent delays at Gate 2 have affected sale preparation and have made scheduling uncertain. At Gate 4, sales have been fully prepared and appraised, and are available to managers to advertise for sale. This allows potential purchasers an opportunity to do their own evaluations of these offerings to determine whether to bid, and if so, at what level.

Timber in this pool can include a combination of new sales, previously offered unsold sales, and remaining volume from cancelled sales. The goal is to maintain Pool 2 at approximately 1.3 times the amount of the projected harvest to allow flexibility in offering sales.

## **Pool 3 - Timber Volume under Contract (Gate 6)**

Timber volume under contract contains sales that have been sold and a contract awarded to a purchaser, but which have not yet been fully harvested. Contract length is based on the amount of timber in the sale, the current timber demand, and the accessibility of the area for mobilization. The longer the contract



## **A Reasons for Scheduling the Environmental Analysis**

period, the more flexibility the operator has to remove the timber based on market fluctuations. Timber contracts typically initially give the purchaser 3 years to harvest and remove the timber purchased. Analysis of Tongass timber sales indicates an average sale length of about 6 years due to modifications in the contracts due to inoperable periods of weather, injunctions, and other contractual delays.

The Tongass attempts to maintain roughly 3 years of unharvested volume under contract to the industry as a whole. This volume of timber is the industry's dependable timber supply, which allows adaptability for business decisions. This practice is not limited to the Alaska Region, but is particularly pertinent to Alaska because of the nature of the land base. The relative absence of roads, the island geography, the steep terrain, and the consequent isolation of much of the timber land means that timber purchasers need longer-than-average lead times to plan operations, stage equipment, set up camps, and construct roads prior to beginning harvest.

A combination of projected harvest and projected demand is used to estimate the volume needed to maintain an even-flow timber sale program. As purchasers harvest timber, they deplete the volume under contract. Timber harvest is then planned and offered by the agency as sales that give the industry the opportunity to replace this volume and build or maintain their working inventory. Although there will be variation for practical reasons from year to year, in the long-run over both the high points and low points of the market cycle, the volume harvested will equal the timber volume sold, excluding cancelled sales.

The goal for Pool 3, volume under contract, is to maintain timber volume at approximately three times the amount of annual projected harvest. This allows the purchasers to have a continuous supply of timber volume available for harvest so they can plan their operations and be flexible to allow for weather conditions and market fluctuations.

# Reasons for Scheduling the Environmental Analysis **A**

Table A-2  
Accomplishments in Gate System and Timber Pools (MMBF)

Pipeline Pool Volume	2007 Goal	FY 07 (as of 1/1/07)
<b>Pool 1</b> Volume Under Analysis (Gates 1 and 2)	279 <sup>1</sup>	490
<b>Pool 2</b> Volume Available for Sale (Gates 3, Gate 4 and Gate 5)	79 <sup>2</sup>	290 <sup>3</sup>
<b>Pool 3</b> Volume Under Contract (Gate 6)	186 <sup>4</sup>	102 <sup>5</sup>

<sup>1</sup> The goal for volume under analysis is approximately 4.5 times the projected harvest for the current year (61.9 MMBF for 2007 based on expanded lumber scenario). Volume under analysis includes all volume in projects from the Notice of Intent through completion of the environmental analysis for sales planned.

<sup>2</sup> The goal for volume available for sale is to have at least 1.3 times the projected harvest for the current year (61.9 MMBF) in sales that have approved NEPA and completion of timber sale preparation.

<sup>3</sup> Includes volume from sales mutually cancelled under the provision of the 2004 Appropriations Act (Sec. 339). However, most of this volume appraises deficit under current market conditions and can not be offered for sale under Congressional direction in the 2006 Appropriations Act (Public Law 109-54, Sec. 416). Does not include volume under litigation – see Table A-3.

<sup>4</sup> The goal for volume under contract is for purchasers to have 3 times the volume under contract as projected for harvest for the current year (61.9 MMBF).

<sup>5</sup> Estimated volume under contract available for harvest (not including timber enjoined from harvest or sales that have had mutual cancellation requests granted).

## How Appeals and Litigation Affect the Timber Sale Program

Timber harvest projects require site-specific environmental analysis that usually is documented in an environmental assessment (EA) or an environmental impact statement (EIS). The public is notified of the analysis and is provided the opportunity to comment on proposals and file an appeal on decisions. The administrative appeal process for most timber harvest projects takes up to 105 days before implementation to occur.

When decisions are appealed and affirmed through the administrative appeal process, the project can still be litigated. Litigation can be a lengthy process. Although litigation does not preclude offering timber for sale, the Forest Service and potential purchasers are often reluctant to enter into a contract where the outcome is uncertain. Recently, sales were enjoined from harvest

## A Reasons for Scheduling the Environmental Analysis

after the contracts were awarded. The outcome of litigation affects the Forest's ability to provide a reliable timber supply.

Table A-3

### Timber Volume Involved in Appeals and/or Litigation<sup>1</sup>

Timber volume remanded on appeals <sup>2</sup>	23 MMBF
Timber volume involved with litigation	212 MMBF
Timber volume under contract enjoined from implementation	0 MMBF

<sup>1</sup> As of March 1, 2007

<sup>2</sup> Remanded – Decision overturned during internal review. Does not include volume in decisions currently in the appeal period or undergoing an appeal review.

## How Does the USDA Forest Service Decide Where Timber Harvest Projects should be Located?

The location of timber sale projects is based first on the land allocation decisions in the Forest Plan. Under the 1997 Forest Plan, lands designated for possible timber harvest are in the development Land Use Designations (LUDs), primarily the Timber Production, Modified Landscape, and Scenic Viewshed LUDs.

### Timber Resource Land Suitability

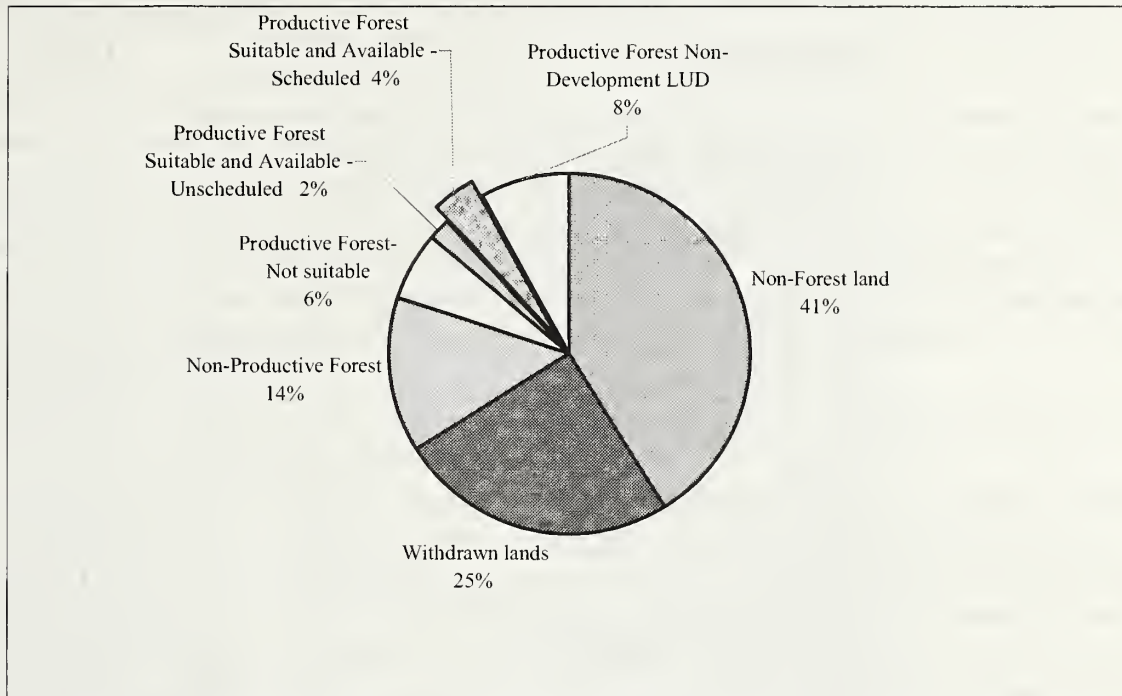
The second consideration is the suitability of the land for timber production. Many acres within the development LUDs are not suitable for timber production due to poor soils or steep slopes. The process for determining the suitability of the land is found in the Forest Plan, Appendix A. Figure A-2 depicts the classification of all the lands within the Tongass National Forest. Four percent of the Tongass land base, the suitable, available and scheduled forest land, provides the land base for the Allowable Sale Quantity of 267 MMBF per year. Under the 1997 Forest Plan, the remainder of the land, approximately 96 percent, does not allow, is not scheduled, or is not physically suitable.



# Reasons for Scheduling the Environmental Analysis A

Figure A-2

## 1997 Forest Plan Timber Resource Suitability Analysis



Non-Forest land – Land that has never supported forests, e.g. muskeg, rock, ice, etc.

Withdrawn Lands – Lands designated by Congress, the Secretary of Agriculture, or Chief for purposes that preclude timber harvest, e.g. Wilderness Areas

Non-productive Forest – Forest land not capable of producing commercial wood on a sustained yield basis

Productive Forest, Not suitable, Physical Attributes – Forest land unsuitable for timber due to physical attributes (steep slopes, soils, etc.) and/or inadequate information to ensure restocking of trees within five years of final harvest.

Productive Forest, Not Suitable, Non-development LUD – Productive forest lands where timber production is not allowed due to Forest Plan land use designation, e.g. Semi-Remote Recreation, Old-growth Habitat, etc.

Productive Forest, Suitable and Available, Scheduled – Forest land that meets all the criteria for timber production suitability and is available and is scheduled by the Forest Plan over the planning horizon

Productive Forest Suitable and Available Unscheduled – Forest land that meets all the criteria for timber production suitability, is available for harvest, however was not scheduled in the Forest Plan model for harvest.

### District –level Planning

The Tongass National Forest is divided into ten ranger districts. For planning and scheduling purposes, the Allowable Sale Quantity (ASQ) has been allocated to the ranger districts based on the Forest Plan modeling (FORPLAN) results of suitable and available acreage. The average annual distribution of the full Forest Plan ASQ by ranger districts is displayed in Table A-4 (all volumes are identified as sawlog plus utility).

# A Reasons for Scheduling the Environmental Analysis

Table A-4

Annual Distribution of Forest Plan Allowable Sale Quantity (mmbf) by District

Ranger District	Non-Interchangeable Component (NIC) <sup>1</sup>	
	NIC I	NIC II
Ketchikan/Misty Fiords	32	7
Thorne Bay	42	9
Craig	33	7
Wrangell	28	6
Petersburg	50	9
Sitka	17	4
Hoonah	7	2
Juneau	7	2
Yakutat	4	1
Admiralty National Monument	0	0
NIC Totals	<b>220</b>	<b>47</b>
<b>ASQ Total(mmbf)</b>	<b>267</b>	

<sup>1</sup> NIC I component – lands that can be harvested with normal logging systems including helicopter logging with less than ¾ mile yarding distance.

NIC II component – includes land that has higher logging costs due to isolation or special equipment requirements.

The Forest Supervisor for the Tongass National Forest is responsible for the overall management of the Forest's timber sale program. Included within these responsibilities is making the determination on the amount of timber volume to be made available to industry. Whether or not sufficient funding is appropriated to attain the program is the responsibility of the Congress and the President.

The District Rangers to develop a timber sale plan of the potential timber harvest projects. This plan aims to attain the prescribed offer level for the current year based on the estimated annual market demand and to develop a timber program for several years of the planning cycle. The offer level for the current year in this plan is based, to the extent possible, on the forecasted annual market demand. Demand may fluctuate from year to year but recent years have shown little change in the annual demand projection. Offerings may vary from year to year but recently they have been in the low market scenario range, as determined by the projected annual demand.

## Reasons for Scheduling the Environmental Analysis A

The District Ranger is responsible for identifying and recommending the project areas for the 5-Year Timber Sale Plan. The Ranger's role is to develop and recommend to the Forest Supervisor timber harvest projects that meet Forest Plan goals and objectives. Districts work on various timber sale projects simultaneously, resulting in continual movement of projects through the stages of the timber program pipeline. This schedule allows the necessary time to complete preliminary analysis, resource inventories, environmental documentation, field layout preparations and permit acquisition, appraisal of timber resource values, advertisement of sale characteristics for potential bidders, bid opening, and physical award of the timber sale. Project delays through the completion of Gate 2 attributable to legal injunctions and litigation have affected the offer level in recent years. Once all of the Rangers' recommendations are made and compiled into a consolidated schedule, the Forest Supervisor is responsible for the review and approval of the final timber sale plan.

Considerations the District Ranger takes into account for each project, such as the Scratchings Timber Sale, include:

- The Scratchings project area contains a sufficient number of suitable timber production acres allocated to development Land Use Designations. Available information indicates that the timber volume being considered for harvest can be achieved while meeting Forest Plan goals, objectives, and standards and guidelines.
- Other resource use and potential future uses of the area and of adjacent areas and of non-National Forest Service lands.
- Areas where the investment necessary for project infrastructure (roads, bridges, etc.) is achievable with the estimated value of timber in the project area. Where infrastructure already exists, the project would allow any maintenance and upgrade of the facilities necessary for removal of timber volume.
- Areas where investments for the project coincide with long-term management based on Forest Plan Direction.

The implementation of the sales on the timber sale plan depends in part on the final budget appropriation to the agency. In the event insufficient budget is allocated, or resolution of pending litigation or other factors delay planned sales, timber sale projects are selected and implemented on a priority basis. Generally, the higher-priority projects include sales where investments such as road networks, camps or log transfer facilities have already been established or where land management status is not under dispute. The distribution of sales across the Tongass is also taken into account to distribute the effects of sales and to provide sales in proximity to timber processing facilities. Timber sale projects scheduled for the current year that are not implemented, or the remaining volume of sales that are only partially implemented, are shifted to future years in the plan. The sale plan becomes very dynamic in nature due to the number of influences on each district.



## **A Reasons for Scheduling the Environmental Analysis**

This project meets all laws and regulations governing the removal of timber from National Forest System lands, including Forest Service policies as described in Forest Service manuals and handbooks and the 1997 Forest Plan and Record of Decision. Based on current year and anticipated future timber volume demand and the timber supply provisions of the Tongass Timber Reform Act, the analysis of the Scratchings project is prudent at this time to meet timber sale needs as included on the approved multiple-year timber sale plan. The anticipated budget allocations and the availability of resources are sufficient to prepare and offer this project for sale as scheduled.

### **How Does This Project Fit into the Tongass Timber Program?**

This project is currently in Gate 2, Project Analysis. The amount of volume considered for harvest under the action alternatives ranges from 17 MMBF to 36 MMBF, which would contribute to the Tongass timber sale program. A no-action alternative is also analyzed in this EIS. If an action alternative is selected in the decision for this project, this volume will be added to the volume available for sale.

As described in the Pools of Timber section of this appendix, the volume of timber needed to maintain Pool 1 is 4.5 times the amount of the projected harvest to account for projects at varying stages of analysis for that year. As displayed in Table A-2, the goal for volume under analysis is 589 MMBF. Currently, the forest-wide volume under analysis (Pool 1) is about 490 MMBF and includes the volume for this project. This project contributes to timber sale program planning objectives to meet the goal of providing an orderly flow of timber from the Tongass on a sustained yield basis to meet timber supply requirements. It is reasonable to be conducting the environmental analysis for this project at this time. The timber volume from this project is currently proposed for offer starting in Fiscal Year 2007.

### **Why is this Project Occurring in This Location?**

As explained above, timber harvest project areas are selected for environmental analysis for a variety of reasons. The reasons this project is being considered in this area include:

- The Scratchings Timber Sale Project Area contains sufficient acres of suitable and available forest land to make this timber harvest proposal reasonable. Areas with available timber need to be considered for harvest in order to seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand from such forest, and (2) meets the market demand from such forest for each planning cycle, pursuant to Section 101 of the Tongass Timber Reform Act (TTRA).
- This project is close to existing mills in Ketchikan and on Prince of Wales Island that are in need of forest products to maintain production levels. Forest products made available from this sale will provide employment to local loggers, truckers, mill workers and other associated services.

## Reasons for Scheduling the Environmental Analysis A

- The Scratchings Timber Sale is located on Suemez Island and will utilize existing roads and an existing LTF in Port Refugio. A road system and log transfer facility are already in place to provide access to many proposed timber harvest units, and to transport the harvested logs. Timber sales within roaded areas are particularly important to meet market demand at this time.
- Effects on subsistence resources from timber harvest are projected to have few differences based on the sequence in which areas are harvested. Harvesting other areas with available timber on the Tongass National Forest is expected to have similar potential effects on resources, including subsistence resources, because of widespread distribution of subsistence use and other factors. Harvest within other areas is foreseeable under the Forest Plan.

## Conclusion

There is a long legislative recognition that timber harvest is one of the appropriate activities on national forests, starting with the founding legislation for national forests in 1897. The National Forest Organic Act provides that national forests may be established “*to improve and protect the forest within the boundaries of, or for the purposes of securing favorable conditions of water flows and to furnish a continuous supply of timber for the use and necessities of the citizens of the United States.*”

Congress’s policy for national forests, as stated in the Multiple-Use Sustained Yield Act of 1960, is “the national forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes.” Accordingly, Congress has authorized the Secretary of Agriculture to sell trees and forest products from the national forests “at no less than appraised value.” The National Forest Management Act directs that forest plans shall “provide for multiple use and sustained yield, and in particular, include coordination of outdoor recreation, range, timber, watershed, wildlife, fish and wilderness.”

In addition to nationwide statutes, Section 101 of the Tongass Timber Reform Act directs the Forest Service to seek to meet market demand for timber from the Tongass, subject to certain qualifications. It is the goal of the Tongass National Forest to provide an even-flow of timber on a sustained-yield basis and in an economically efficient manner. The amount of timber offered for sale each year is based on the objective of offering enough volume for sale to meet the projected annual demand. That annual demand projection starts with installed mill capacity, and then looks to industry rate of capacity utilization under different market scenarios, the volume under contract, and a number of other factors, including anticipated harvest and the range of expected timber purchases.

# A Reasons for Scheduling the Environmental Analysis

As described by Morse (April 2000), in terms of short-term economic consequences, oversupplying the market is less damaging than undersupplying it. If more timber is offered than purchased in a given year, the unsold volume is still available for re-offer in future years. The unsold volume would have no environmental effects because it would not be harvested. Conversely, a short fall in the supply of timber can be financially devastating to the industry. This project could supply from 17 MMBF to 36 MMBF of volume for sale, with harvest potentially beginning in 2007.

## References

- Alexander, S. in preparation. Tongass National Forest Timber Sale Procedures: Using Information about Market Demand to Schedule FY 2006 Timber Offerings (Draft). USDA Forest Service Region 10, Juneau AK. xx p. On file with: Regional Economist, Alaska Region, PO Box 21628, Juneau AK 99802
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- USDA Forest Service, Forest Plan Amendment Draft Environmental Impact Statement, January 2006.



# **Appendix B – Response to Comments**



# Appendix B

## Response to Comments

### Background

A Draft Environmental Impact Statement (EIS) was prepared by the Forest Service, and mailed for public comment in August 2006. The 45-day comment period ended September 18, 2006. Eleven comment letters were received from the following individuals or organizations. This appendix displays the annotated comments and the Forest Service response to those comments.

List of commenters	
<b>AFA</b>	Graham, Owen J. Executive Director Alaska Forest Association, Inc. 111 Stedman Street, Suite 200 Ketchikan, AK 99901-6114
<b>CCA</b>	Nickerson, Dennis Environmental Coordinator Craig Community Association P.O. Box 828 Craig, Alaska 99921
<b>COOK</b>	Cook, Joe Professor and Curator University of New Mexico Albuquerque, NM 87131
<b>CWP</b>	Scott, Gabriel Alaska Field Representative Cascadia Wildlands Project P.O. Box 853 Cordova, AK 99574
<b>DAWSON</b>	Dawson, Natalie PhD Candidate University of New Mexico 159 Castetter Hall Department of Biology Albuquerque, NM 87131



## B Response to Comments

<b>EPA</b>	Reichgott, Christine B. Manager, NEPA Review Unit U.S. Environmental Protection Agency, Region 10 1200 Sixth Ave. Seattle, WA 98101	
<b>NMFS</b>	For Mecum, Robert D. Acting Administrator, Alaska Region National Marine Fisheries Service P.O. Box 21668 Juneau, AK 99802-1668	
<b>OPMP</b>	Erin Allee, ACMP Project Specialist Department of Natural Resources Office of Project Management/Permitting P.O. Box 111030 Juneau, AK 99811-1030	
<b>SACHAU</b>	Sachau, B. 15 Elm Street Florham Park, NJ 07932	
<b>SCS</b>	Bosman, Corrie Sitka Conservation Society Box 6533 Sitka, AK 99835	Perkins, Deborah The Wilderness Society 430 West 7th Ave., Suite 210 Anchorage, AK 99501
	Edwards, Larry Greenpeace Box 6484 Sitka, AK 99835	Lawrence, Niel Natural Resources Defense Council 3723 Holiday Drive Olympia, Washington 98501
	Rorick, Mark Juneau Group of the Sierra Club 1055 Mendenhall Pen. Rd. Juneau AK 99801	
<b>SEACC</b>	Sherman, Dave Grassroots Organizer Southeast Alaska Conservation Council 419 6 <sup>th</sup> Street, Suite 200 Juneau, AK 99801	

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August 29, 2006

Doc. *0660*

File No *D.4.6*

USDA Forest Service  
Thorne Bay/Craig Ranger Districts  
ATTN: Scratchings Timber Sale  
P.O. Box 19001  
Thorne Bay, AK 99919

RE: Comments on Scratchings DEIS

Thank you for the opportunity to comment on the Scratchings timber sale Draft EIS. This DEIS has many improvements over the many other DEISs I have reviewed. The draft acknowledges that there are benefits to wildlife as well as impacts and it seems to acknowledge that the harvesting of the timber simply changes relatively small patches of the forest from one type of habitat to another. I have noticed that the second growth habitat is not uncommon on the Tongass; there are many small, medium and large areas that have various age classes of timber in addition to the vast expanses of old-growth. Those who say old-growth is better than young growth are simply biased. Neither is better than the other, they simply have differences as well as similarities.

AFA 1

This Draft also includes more volume and we can see that an effort was made to insure acceptable economics. We studied the economic comparison information in Chapter #2, but it was not very complete. We are concerned that the appraisal data in the draft indicates that alternative #2 is slightly uneconomic. Our own analysis indicates it is \$73/MBF (about \$33/CCF) below breakeven; more than four times as deficit as suggested in the DEIS. Our earlier appraisal of the sale using the estimated data available at the scoping stage indicated that the sale would appraise positive with a Pond Log Value for the timber of about \$402/MBF and a cost of constructing the necessary roads, harvesting the timber and delivering it to the mills of about \$329/MBF, which left a margin for stumpage and profit of \$72/MBF. An appraisal using the data in this DEIS for alternative #2 is attached to the end of this letter. The updated data indicates the Pond Log Value is now about \$52/MBF lower and the cost of accessing and harvesting the timber is now about \$51/MBF higher, thus the sale would generate a loss as it is currently configured. The difference in Value is due primarily to a change in the species mix and the cost difference is primarily due to a combination of more helicopter logging and more road construction. We question the legality and the wisdom of preparing alternatives that

AFA 2

## B Response to Comments

AFA 2  
cont. are economically deficient by even your own appraisal estimates. Such actions indicate a lack of adequate attention to the requirement to offer only economic timber. We note that none of the alternatives suggest deviating from any of the other requirements of law. Many of the comments I have are directed at improving the economics of this offering.

AFA 3 The section of the DEIS that talks about Wildlife Habitat appears to be based upon a "critical deer winter habitat" model that assumes the worst case winter conditions, assumes that deer can survive the harsh winters in only high-volume timber stands and treats Suez Island like every site in Southeast Alaska, from Haines to south POW. In reality, the winter conditions vary a lot across Southeast Alaska. Suez has very mild winters because of its location. Even in colder regions, deer survive harsh winters just fine using whatever shelter is available, whether it is dense timber, deep draws, rock cliffs or any other micro-feature that is available to them. In any case, the analysis seems to say that over 90% of the so called "critical habitat" has been unaffected by past logging and thus any impacts from this small timber sale should not be a big problem.

AFA 4 The draft EIS has a section on second-growth management that acknowledges that these stands support a different mix of wildlife species. That is good, but I would like to see equal treatment on this issue. The hypothetical negative impacts go on for page after page, whereas the positive impacts are listed in a single sentence. The second-growth section goes on to say that most forbs and shrubs are shaded out of these stands beginning about 25 to 35 years after harvest and do not return until about 150 years. My experience is that the shading effect is not significant until about 45 years and the forbs and shrubs begin to return after about 70 to 80 years, particularly on the slopes where most of the current harvesting is planned.

AFA 6 The Wildlife Habitat section also suggests that the Old Growth Reserves on this island be enlarged. I think the reserves are unnecessary and are prohibitively costly. Congress and others criticize the below cost timber sale program and the primary cause of the poor economics is the Old Growth Reserve strategy that greatly increases the acreage of timber that must be roaded and harvested in order to get the same volume of timber that could be accessed without the reserves. Additionally, the reserves are redundant; they do not recognize the vast acreages of productive old growth that is already set aside in wilderness, National Monuments, Congressional Roadless areas, beach fringe reserves, minimum stream buffers, oversize stream buffers, bird nest buffers, visual buffers, karst buffers, etc. Many of these reserves were created specifically for wildlife habitat.

AFA 7 The section on silvicultural prescriptions seems to be talking about how to maintain old-growth characteristics in and about the harvest units rather than how to improve the growth and quality of the second-growth stands. Requiring partial cuts is a dangerous practice that will result in injury to our workers and we oppose those needless requirements. Leaving patches of timber inside of the cutting units is less dangerous, but still increases the risk of injury. Further, it increases the cost of harvest and contributes to the below cost sale problem and lastly it does not maximize the growth and value of the second-growth timber. We have lots of old-growth on the Tongass. We need healthy,



vigorous second-growth stands to supply future mill needs as well. The more intensively you manage the second-growth stands, the less old-growth timber will have to be harvested.

AFA 8 | We're glad to see that you intend to maintain the permits for rafting of logs at Suemez. Although the mills generally prefer barging, it is very costly and not always practical, particularly for the smaller operators.

Reading through the unit cards, we note the following:

- |        |    |  |
|--------|----|--|
| AFA 9  | 1. | There were a lot of hawk sightings on Suemez, probably because of the increased populations of song birds and small mammals in the existing clearcuts.   |
| AFA 10 | 2. | Since the private land at Port Dolores will likely be heavily logged and developed, there is no need for visual set asides in this area. The visitors on the tour boats at the nearby Waterfall Resort are often interested in viewing the logging operations as well as the many pristine areas that exist now and will persist long after this timber sale. For instance, there are several islands just north of Suemez Island that are in a Congressionally established Wilderness area.   |
| AFA 11 | 3. | Suemez is a remote island with no permanent residents. The only permanent road other than the ones already constructed should be the one that accesses the private land at Port Dolores. All of the other roads should be constructed as temporary roads. Even the low-standard specified roads cost much more to build than temporary roads.  |
| AFA 12 | 4. | The Market Demand section of this EIS is grossly in error. The annual demand estimate the agency makes is a self-fulfilling prophesy that assumes demand is limited primarily to the volume harvested in prior years and does not consider that the harvest level is limited by the amount of timber available. There is a huge demand for the products that our mills produce and the mills have been pleading for increased timber sale volumes for many years. In addition, the Governor, the Southeast Conference, the Wrangell, Juneau and Ketchikan Chambers of Commerce and several small communities have urged the Forest Service to restore a timber sale program that will allow the restoration of a fully integrated timber industry. This would require only 1.5 million acres of the 5.7 million acres of commercial timber. That would leave 4.2 million acres (3/4 of the total) in old-growth conditions. <i>Further, Congress has funded the Forest Service since 1999 with sufficient additional money and firm direction to restore a much larger pipeline of timber sales. We have yet to see the agency make any progress; indeed the agency has not even made a plan to accomplish this objective even though the money has been spent!</i> We believe the minimum long-term demand is 360 million board feet (MMBF) annually and the minimum short-term demand is the volume needed to restore a three-year pipeline of timber so that the industry can efficiently operate at the 360 MMBF level. This 1,080 MMBF pipeline is less than half of what the industry had in 1990. |
| AFA 13 | 5. | Most of the individual harvest units include class 3 stream buffers. These arbitrary buffers should be dropped. The buffers increase the cost of harvest without any benefit to fish habitat (there are no fish in class 3 streams and it has been well-   |

## B Response to Comments

- documented that temperature and sediment impacts from logging are very temporal and dissipate very quickly as the water moves downstream.
- AFA 14 | 6. Most of the planned class 2 buffers are 300 feet wide on each side of the class 2 streams. The law, which was based upon the science that said almost all of the benefit from stream buffers came from the trees that are within 66 to 100 feet of the stream, requires only 100 foot buffers. This should be the standard unless there is a valid site-specific reason to increase it.
  - AFA 15 | 7. Since most of the timber on Suemez is old-growth and since Suemez has such relatively mild winters, there should be no hazardous, costly partial cut requirements or requirements to leave patches of timber standing within the small harvest units.
  - AFA 16 | 8. Unit 633-017 - We don't have good type maps of the units to confirm some of these suggestions, but try to add timber between the NE boundary and the stream buffer.
  - AFA 17 | 9. Unit 633-018 - Drop the 24"+ leave tree requirement. It is costly and hazardous.
  - AFA 18 | 10. Unit 634-004 - Try to add timber between the unit and the stream buffer at the SW end of the unit.
  - AFA 19 | 11. Unit 634-005 - Try to enlarge this unit by adding timber in the center of the unit.
  - AFA 20 | 12. Unit 634-008 - Move the unit to the east side of the road to avoid the "extreme high risk" area; drop the expanded OGR (HCA) proposal to allow moving the unit out of the high risk area.
  - AFA 21 | 13. Unit 634-011 - Try to include all of the timber that lies between the two old harvest units, rather than just these two small patches.
  - AFA 22 | 14. Unit 634-024 - Can the road in unit 634-027 be extended into this unit and unit 634-032?
  - AFA 23 | 15. Unit 634-033 - Try to add the volume to the north of the landing in the SW end of the lower unit.
  - AFA 24 | 16. Unit 634-037 - The map indicates the stream on the north boundary is class 2, but the text seems to say it is class 1. If it is class 2, then drop the oversize buffer.
  - AFA 25 | 17. Unit 634-061 - Enlarge this unit to the west if possible.
  - AFA 26 | 18. Unit 634-067 - Enlarge this unit to the north to avoid isolating timber adjacent to the oversize class 1 buffer if possible.
  - AFA 27 | 19. Unit 634-068 - Add timber along the existing road to replace the timber lost in the 600-foot radius bird nest buffer.
  - AFA 28 | 20. Unit 634-069 - What is the exclusion area inside this unit? How do you propose to cable log around it?
  - AFA 29 | 21. Unit 634-100 - Enlarge this unit to the SW to avoid isolating a narrow strip of timber between the unit and the second-growth stand.
  - AFA 30 | 22. Unit 634-101 - Enlarge this unit to the second-growth edge on the east side and to the class 1 buffer on the west side. Do you really need the oversize buffer along the class 1 stream? The science and the law indicate a 100 foot buffer on each side of the stream is adequate.
  - AFA 31 | 23. Unit 635-007 - Enlarge this unit to the NW as long as there are adequate tail-holds and deflection for the cable logging.
  - AFA 32 | 24. Unit 635-012 - To avoid isolating timber, try to enlarge this unit to the boundary of the second-growth on the SW side of the unit.

## Response to Comments B

- AFA 33 | 25. Unit 635-013 - To improve economics and to avoid future wind damage, try to enlarge this unit to include all of the timber between the two harvest units and the second-growth stands.
- AFA 34 | 26. Unit 635-063 - Why is there a reserve area inside this unit?
- AFA 35 | 27. Unit 635-064 - In order to justify the cost of the road, try to enlarge this unit by including all of the timber that can be reached from the planned road.

AFA 36 | Again, thank you for the opportunity to comment on this project. The suggestions made above were done without the benefit of type maps and without good topographic maps of the area, consequently some of the suggestions may not be possible to implement. If better type maps and topographic maps were available or if we could make a visit to the site, we could make additional suggestions.

Sincerely,



Owen J. Graham  
Executive Director

cc   Forrest Cole  
      Denny Bschor  
      Mark Rey  
      Kate Williams  
      Nathan Bergerbest  
      Matt Hite  
      AFA Executive Committee  
      Jack Phelps



## B Response to Comments

	Species Mix %	Selling Value \$/MBF	Mfg. Cost \$/MBF	Pond Log Value
Spruce	24%	\$860	\$250	\$610
Hemlock	60%	\$450	\$260	\$190
Red Cedar	12%	\$720	\$240	\$480
Yellow Cedar	4%	\$900	\$100	\$800
<b>Total</b>	<b>100%</b>			<b>\$350</b>

Cost Center	Units		\$/mbf	\$
Cutting	42,000		\$35	\$1,470,000
Shovel yarding	1,000		\$60	\$60,000
Cable yarding -CC	25,000		\$95	\$2,375,000
Cable yarding -PC	0	no partial cut	\$150	\$0
Helo yarding & loading	16,000		\$300	\$4,800,000
Load & haul	42,000		\$20	\$840,000
Dump/raft/tow or barge	42,000	short tow	\$40	\$1,680,000
Sorting & Scaling	42,000	lump-sum	\$10	\$420,000
Spec roads (miles)	13		\$175,000	\$2,275,000
Temp roads (miles)	6		\$130,000	\$780,000
Other facilities - recon	45		\$2,000	\$90,000
MOB (lump sum)	1		\$100,000	\$100,000
Camp cost	42,000		\$15	\$630,000
Stumpage (base)	42,000		\$10	\$420,000
<b>Total</b>	<b>42,000</b>			<b>\$15,940,000</b>

Value	\$350
Cost	\$380
Margin (Value - Cost)	-\$30

### Responses to AFA – Alaska Forest Association, Inc., Owen J. Graham

**AFA 1** - The values of all alternatives may fluctuate with the market and costs. Data at the scoping stage has been updated after additional field review and resulted in more road construction and the need for more helicopter logging. In addition, our numbers will differ from yours since we are still using our NEPA valuation method based on TEA. The final appraisal will be done using more accurate cruise data and the current appraisal bulletin data.

**AFA 2** - Although we strive to prepare economically viable alternatives, part of the reason for alternatives to show negative values during the planning process is to show the trade-offs between the costs of road construction to obtain more volume by entering new areas and the cost of helicopter logging to maximize resource protection. There is nothing illegal about showing that an alternative may appraise negative at the planning stage or to show a negative effect for any resource in an Environmental Impact Statement.

The 2006 Appropriations bill does not allow the Tongass to offer sales that appraise negative, unlike the other National Forests. If the decision is to harvest timber from this project, any sale offered will need to appraise positive.

**AFA 3** - We agree that the deer model assumes the worst-case scenario when calculating deer numbers. It is also true that our calculations of past activity on Suemez Island indicate that there has been relatively little impact to the overall deer population on the island. We also agree, and our calculation show, that the proposed activity will have minimal impact on the deer population of Suemez Island.

**AFA 4** - Thank you for your comment concerning the second growth management. While it is true that there are both positive and negative aspects to second growth stands, there has been little research on the positive aspects of these stands. See Alaback 1982, 1984, 1990 and 1996 for research information on stem exclusion stages and stand regeneration time frames.

**AFA 5** - The timing at which canopy cover closes and stem exclusion starts and its duration in second growth stands varies. Timing primarily is a function of the site index of the stand. Higher site index stands will close faster and canopy closure will last longer than in lower site stands.

**AFA 6** – Old Growth Reserves are part of the Tongass Conservation Strategy and are required by the Forest Plan. Several of the designated Wildernesses and many roadless areas do function as Old Growth Reserves and are recognized as such as part of the Strategy. The other areas such as stream buffers, beach fringe, and nest buffers form the matrix part of the Strategy and are complimentary rather than redundant (Forest Plan FEIS, p. 3-382).

**AFA 7** – The Final EIS proposes using the two-age silvicultural system with dispersed residual trees within the helicopter yarding areas where windthrow risk is acceptable for partial cutting. Harvesting only the larger diameter trees from some helicopter units should improve the economics of potential sales if an action alternative is selected. The Final EIS proposes to wait until unit layout to determine the need for any windfirming treatments and what the prescription will be to obtain them. (Chapter 3 Timber/Silv Section page 3-80 and 3-87). This way partial cut cable logging would only occur where it is necessary to obtain a windfirm stand edge adjacent to high resource value areas.

## **B Response to Comments**

Two-age management using grouped retention is proposed within stands that have low windthrow risk and required some deferred areas to meet scenery objectives. Using a two-age group retention prescription maximized the acreage that could be harvested while still meeting visual requirements.

**AFA 8** - The permit for Port Refugio LTF will be maintained for both barging and rafting for the reasons that you mention.

**AFA 9** - We agree that there have been many hawk sightings on Suemez Island. One of the reasons for the many sightings may be the prey populations on the island, another factor may be the amount of time that has been spent on the island conducting various surveys during which hawk sightings were noted.

**AFA 10** - There are no plans for development on the Private land in Port Dolores at this time. The Forest Plan Scenery standards and guidelines are used to determine any deferral areas are needed to meet the adopted Visual Quality Objectives. See Unit cards for site-specific information.

**AFA 11** – The definition of a temporary road is a road necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not a forest road and that is not included in a transportation atlas. The designation of a road as a temporary road or National Forest System Road is not based on the presence of or accessibility by resident. If some type of control is necessary (e.g., fish timing, bridge construction, survey and design, timing for wildlife, access for future management activities), then the road is placed in National Forest System Road status.

**AFA 12** – The estimate of the annual demand uses many factors and is not limited to the harvest of previous years. The Forest Plan Amendment DEIS, which was released for comment in January 2007, presents alternatives with a range of estimated ASQ that would cover the 360 mmbf that you mention.

Pipeline money has been received by the Tongass since 1999. However, several events precluded this money being used as efficiently as it could be. Many projects were significantly delayed by the 1999 Forest Plan ROD and subsequent litigation and the 2001 Roadless Rule and the need to supplement the Forest Plan (2003). Some of the pipeline projects that were completed are still in unresolved litigation.

**AFA 13** – All Class III Riparian Management Area (RMAs) are a requirement under the Forest Plan Riparian Standards and Guidelines (S&Gs).

**AFA 14** – The areas that you referred to were not removed from harvest due to stream buffer requirements. In no case are stream buffer recommendations or requirements of any type, including those on Class II streams, 300 feet wide on each side of a stream. Stream buffers of a minimum 100 feet are required by the Tongass Timber Reform Act on all Class I streams and Class II streams that flow directly into Class I streams. In addition, the Forest Plan Riparian S&Gs (pages 4-53 through 4-73) provide additional management direction for RMAs by stream Process Group and stream Class. RMAs vary in width depending on these attributes.

**AFA 15** – Please see response to AFA 7.



## Response to Comments B

**AFA 16** – The area you mention was originally proposed as part of Unit 633-017 but was deferred by the soil scientist for soils stability concerns and steep slopes (see unit card in the project record).

**AFA 17** – The Final EIS will propose harvesting trees larger than 24" diameter within the helicopter yarding areas where windthrow risk is acceptable for partial cutting. Harvesting only the larger diameter stems from helicopter areas is a common practice that should improve the economics of potential sales if an action alternative is selected.

**AFA 18** – All merchantable timber in that area is within TTRA buffers or isolated by these buffers.

**AFA 19** – This area was originally proposed as part of Unit 634-005 but was deferred by soil scientist for soil stability concerns and steep slopes (see unit card in the project record).

**AFA 20** – The area you propose to move the unit into is predominantly non-merchantable. The OGR boundary was adjusted in this area to be adjacent to the existing road in order to simplify map and field location.

**AFA 21** – This area was originally proposed as part of Unit 634-011. Portions of the area were deferred for soil stability concerns. Other areas were deferred for low volume timber, as well as for operability due to old landslides, blowdown and the close proximity of large v-notches (see unit card in the project record).

**AFA 22** – These areas were field reconnoitered and routes were determined not to be feasible due to large v-notches throughout the watershed.

**AFA 23** – The area you propose to add was within the original proposed unit but was determined to be inoperable due to v-notches and multiple cliff lines.

**AFA 24** – The unit card map describes the two streams (Stream 8 and Stream 9) on the north boundary of the unit as Class II, which means they have resident fish populations. The oversize buffer that you referred to is an area deferred from the harvest unit for slope stability as described under Soils. This section mistakenly referred to the stream as a Class I stream and this error has been corrected in the Final EIS

**AFA 25** – The planned unit abuts an existing clearcut to the north. The area to the west was within the original planned unit but had a section deferred by the soil scientist for soil stability concerns and steep slopes. This deletion isolated the remaining portion of the unit further west (see unit card in the project record).

**AFA 26** – The north boundary of Unit 634-067 is defined by stream buffers and non-merchantable timber (see unit card in the project record).

**AFA 27** – Nest buffer requirements will be reassessed at time of unit layout.

**AFA 28** – The Draft EIS unit card map was in error. The exclusion area shown will not appear on the final unit card map.

**AFA 29** – Minor adjustments to the 634-100 unit boundary will be made at time of unit layout, if appropriate.

## **B Response to Comments**

**AFA 30** – Unit 634-101 is planned to abut second growth and non-merchantable timber types to the east and an existing harvest area to the west. The north boundary is adjacent to a stream buffer (see unit card in the project record).

**AFA 31** – Within Unit 635-007, the area you propose to add was reviewed as part of the original unit configuration and was determined to be uneconomical to log due to low timber volume.

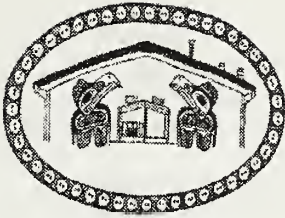
**AFA 32** – The 635-012 area you propose to add was reviewed as part of the original unit configuration and was determined to be uneconomical to log due to low timber volume.

**AFA 33** – The Final EIS unit configuration includes all merchantable timber in this area.

**AFA 34** – Reserve area shown in the unit is an area of soil concerns resulting from steep slopes and cliffs. This area was determined to be inoperable for either cable or helicopter systems (see unit card in the project record).

**AFA 35** – Final EIS unit configuration includes all merchantable timber in this area.

**AFA 36** – The Forest Service appreciates your site-specific comments on the Scratchings project.



## CRAIG COMMUNITY ASSOCIATION

P.O. Box 828  
Craig, Alaska 99921  
Phone: 907-826-5125  
Fax: 907-826-3997  
Email: whalehouse@hotmail.com

Date: 18 September 2006  
To: USDA  
From: Craig Community Association  
Environmental Protection Division  
Re: Scratchings Timber Sale

Greetings Planning Staff,

Thank you for your time. This letter is in regards to the *Scratchings Timber Sale*. Craig Community Association; a federally recognized Tribe- has some comments in regards to your proposed Environmental Impact Statement for the *Scratchings Timber Sale*.

- CCA 1 | Craig Community Association has Tribal members who rely on Suemez Island for Unit 2 Hunting, Prince of Wales Island. The challenging economic times put excessive force to utilize our customary and traditional ties to our land, water and resources.
- CCA 2 | Another area of concern is the *High Volume Old-Growth Habitat* that will be affected. This area is prime for wildlife; also valuable for commercial timber production. Suemez Island is close to the residents of Hydaburg as well as Craig; who rely on these areas to continue their traditional gathering practices.
- CCA 3 | Road construction on Suemez is an area that is also of concern. Up to twenty (20) miles of road construction will be done for this Timber Sale. It seems a bit large for the 42 million board feet (mmbf).
- CCA 4 | Threatened, Endangered and Candidate Species that live within this large Timber Sale is another area of concern. The areas at which they inhabit are being limited each day.
- CCA 5 | **Types & Amounts of Resources Gathered (Ch.-3, 3-164, para. 4)-** It is stated that up to four (4) communities (Craig, Hydaburg, Klawock & Thorne Bay) utilize this Suemez Island (WAA 901) for subsistence; based off of the Tongass Resource Use Cooperative Survey (TRUCS).  
  
TRUCS states that WAA 901 is ranked 11<sup>th</sup> for use by Craig residents with an average of 11 deer harvested annually. Hydaburg ranks WAA 901 3<sup>rd</sup>, respectively with seven (7). With a combined average of eighteen (18) deer caught annually within WAA 901, this amount of deer meat can feed a large amount of families.



## B Response to Comments

### Heritage Resources on Suez Island

CCA 6 | Fourteen (14) Heritage sites are documented in your EIS (Volume 1, Chapter 3, pg. 3-202), it also fails to discuss the possibility of possible grave sites.

It is documented in *Through Spanish Eyes* (Wallace M. Olson), Page 62-

Events in the harbor of Bucareli Bay-

Pg. 62, Para 4- "As soon as we were anchored came two Canoes of Indians, who did not wish to come alongside, making many signs with widespread arms, and calling out in unison as if they were singing."

Pg. 63, Para 6- "The 13<sup>th</sup> (13 May 1799) I descended to land with my Second in Command, and the Captain of the *Favorita*, with all the officers of both ships, carrying in the launch with al reverence the Virgin of the Rosary, and having disembarked on the beach where I mentioned as a stream of water, the Sovereign Lady was placed upon an altar which I ordered to be set up under a large tent, where was celebrated a Mass sung by the three Chaplains of both ships, having set up before the altar, outside the tent the Holy Cross which I ordered to be made from two pines; when the Mass and Sermon were concluded, this cross was carried on the shoulders of the Captains and Officers to the place at which it remained planter, which was at the approach of the mountain where it was clearly seen from the place where we were anchored; having ordered several salutes of artillery and muskets from both frigates, thus the Virgin was saluted from on board as well as on shore.

Pg. 63, Para 7- This ceremony I ordered chiefly to give thanks to the Virgin of the Rosary, patroness of this Frigate, for our fortunate voyage, and at the same time I wished to leave set up in the place the Most Holy Cross, since in the year 1775 this Bucareli Sound was explored by Lieutenant Dn. Juan de la Quadra when he commanded the schooner *Sonora*, and at that time he took possession in due form as directed by Our Catholic King, omitting only the requirement of Mass, since he had no chaplain; for this reason it was not necessary to repeat the ceremony of taking possession.

Pg. 63, Para 8- "On the 14<sup>th</sup> in accordance with my orders the Pilots of both Frigates began to make a survey of the bay or Harbor began to make a survey of the bay or Harbor in which we were anchored, which was given the name of *Santa Cruz*, and on this day and the following it was completed, lacking only the soundings.

Pg. 64, Para. 1- "On the 16<sup>th</sup> the cabin boy Jose Casillas died, and was buried at the foot of the cross.

Pg. 64, Para 7- "On the 22<sup>nd</sup> there died on the shore the sailor of this ship called Felipe Sanabria, I mean Manuel Domingues [sic] and was buried below the Cross.

Pg. 64, Para. 9- "On the 29<sup>th</sup>, there died on the shore the sailor of this Ship named Felipe Sanabria, and he was buried at the foot of the Cross.

CCA 7 | CCA-EPD recommends the use of Alternative four (4) if any logging activity were to  
CCA 8 | commence; although CCA-EPD opposes all logging activity in this WAA.

Of all the alternatives, number four (4) keeps most of the pressure off of the area that surrounds Port Santa Cruz.

CCA 9 | We also suggest more archeological studies to happen around the Port Santa Cruz, and  
other areas on Suemez Island being that the grave sites listed in *Through Spanish Eyes*  
wasn't documented in your EIS.

Please contact us at your convenience with suggestions, questions or comments.

Thank you and have a nice day.

Respectfully,

Dennis Nickerson  
Environmental Coordinator  
Craig Community Association

## **B Response to Comments**

### **Responses to CCA – Craig Community Association, Dennis Nickerson**

**CCA 1** - The estimated deer numbers for Suemez Island after project completion would be above the threshold needed to support both hunters and wolves. The threshold of number of deer needed to support both wolves and humans has been set at 18 deer/mile<sup>2</sup>. Our calculations indicate that Suemez Island is currently capable of supporting an estimated 37 deer/mile<sup>2</sup>. As a result, of the proposed project, this number is expected to remain at 37 deer/mile<sup>2</sup>. The analysis in Chapter 3 shows there would not be a significant possibility of a significant restriction to subsistence uses from harvest into the future, if any of the action alternatives is selected. Please refer to the Subsistence section of Chapter 3.

**CCA 2** - See the Old growth section in the Final EIS for amount of high volume old growth that is proposed for harvest. Our calculations for the Scratchings EIS show that approximately 7 percent of the coarse canopy has been harvested since 1954. The action alternatives for this EIS propose harvesting between 4 to ten percent of the remaining coarse canopy. See Table 3W-6 and 3W-7

**CCA 3** - The amount of road construction varies among alternatives. Alternative 2 proposes the greatest miles of road construction with 12 miles of National Forest System (NFS) road and 7 miles of temporary road. Alternative 4 proposes the least amount with 4 miles of NFS road and 3 miles of temporary road. Roads are necessary to access timber on Suemez Island. Each alternative proposes the least amount of road construction required while meeting the objectives of the alternative.

**CCA 4** – No species listed as threatened, endangered, or candidate species occur on Suemez Island. The only threatened or endangered species that occur near the project area are marine species. The only candidate species is the Kittlitz's murrelet and its terrestrial habitat requirements are associated with glaciers.

**CCA 5** - Our 2007 calculations of the deer on Suemez Island indicate that currently there is an estimated 37 deer/mile<sup>2</sup> (See the Wildlife section of Chapter 3). The deer number is estimated to decline less than one percent and to remain at approximately 37 deer/mile<sup>2</sup> under the all alternatives. By 2108 (i.e., 100 years following harvest) the number is estimated to be 37 deer/mile<sup>2</sup>. The analysis shows that this level of deer harvest can be maintained after the implementation of any proposed action alternative of this project.

**CCA 6** - The Final EIS was edited to include an expanded discussion of past archaeological survey in Port Refugio and Port Santa Cruz and include a synopsis of Spanish Journals translated by Olson (2002) in *Through Spanish Eyes*.

Fifield was in personal communication with Olson and incorporated much of the information through personal reference. Historic and archaeological site locations and site descriptions are exempt from the Freedom of Information Act (FOIA). These are not published in public documents such as EIS. Detailed site locations and descriptions were included in the report to SHPO for Section 106 compliance.

**CCA 7** – CCA's recommendation for selection of Alternative 4 that addresses cumulative impacts to the Dolores watershed is noted.



## Response to Comments B

**CCA 8** – CCA's opposition to all logging activity in Wildlife Analysis Area (WAA) 901 is noted.

**CCA 9** – The Final EIS includes an expanded discussion of past archaeological survey in Port Refugio and Port Santa Cruz as well as a synopsis of Spanish Journals translated by Olson (2002) in *Through Spanish Eyes*. See CCA 6.

## B Response to Comments



Joe Cook  
<cookjose@unm.edu>  
09/13/2006 03:54 PM

To: comments-alaska-tongass-thorne-bay@fs.fed.us  
cc:  
Subject: Scratchings Timber Sale Comments

Dennis Sylvia,  
PO Box 19001  
Thorne Bay AK 99919

Please find below and appended, comments and resources related to this sale.

best regards,  
Joseph A. Cook  
Professor and Curator

Re: Scratchings Timber Sale

I have reviewed the Draft Environmental Impact State for the Scratching Timber Sale on Suemez Island. My colleagues and I have worked extensively on wildlife issues on the Tongass for the past 16 years. That work involves field, museum, and molecular genetic analyses. I have mentored more than 15 graduate students and post-doctoral associates during that time in projects related to Tongass mammals. As a result of those studies, we have published more than 40 peer-reviewed papers (list appended) related to management and conservation of the mammals and biota of this region. It is on that basis that I make the following general and specific observations:

General: This review of wildlife is very weak and poorly grounded in the existing knowledge of the wildlife of the region (i.e., scientific literature).

Specific Comments: The statement few mammal species are found on Suemez Island due to geographic isolation and distance to the mainland is misleading in its implication of limited impact. First, the appropriate scientific authority for this statement should be cited (not Nowacki et al 2001). Geographic isolation also leads to endemism, but this issue is not discussed, even though it is central to the federal mandates of the USDA Forest Service, has been discussed heavily in the literature on the mammals of Suemez Island, and was one of the primary foci of recent TLMP wildlife review in Ketchikan.

COOK 1

COOK 2

COOK 3

COOK 4

COOK 5

COOK 6

This island has had minimal inventory effort for small mammals. Several of the mammals represent distinctive lineages that have limited distributions on islands along the North Pacific Coast. Below we detail what is essentially known for these species from this island. Please note that several species are forest associated. Among these, some are not documented or very poorly documented, precluding our ability to address whether they are endemic or not. Given the distinctiveness of some lineages (e.g., ermine, flying squirrel, and potentially the coastal marten) and their limited distributions worldwide, we urge a cautious (i.e., none) approach to development or logging on this island until these populations are assessed. Marten guidelines should have been used! At a minimum specimens of the potential endemic lineages should be screened using molecular genetic tools to determine their distinctiveness.

\*/Glaucomys sabrinus/\*

Cook 6  
Conf.

- \* 28 specimens preserved at the University of Alaska Museum (UAM)
- \* Included in endemic subspecies /G. s. griseifrons/, Prince of Wales Flying Squirrel, based on nuclear and mitochondrial DNA (Bidlack and Cook 2001, 2002)
- \* Sensitivities: cumulative effects of timber harvests on a forest-dependent species and this subspecies found only on the heavily harvested POW complex of islands.

\*/Microtus longicaudus/\*

- \* 7 specimens preserved (UAM)
- \* Included in Island Clade by Conroy and Cook (2000), which occurs from eastern Southcentral Alaska southward through the islands of the Alexander Archipelago of Southeast Alaska.
- \* Taxonomic revision needed as /M. l. coronarius/ (by name date priority) Swarth 1911 (Type Locality = Coronation Island).

\*/Peromyscus keeni/\*

- \* 30 specimens
- \* Part of distinctive Prince of Wales Island Clade
- \* More extensive and detailed studies needed. Current taxonomy inadequate.

\*/Sorex monticolus/\*

- \* 23 specimens from Suemez Island (all UAM); none sequenced
- \* The limited genetic structure discovered from analysis of mtDNA from the Southeast Alaska region (Demboski 1999, Cook et al. 2001; Demboski and Cook 2001) is inconsistently related to current subspecies (and probably species) boundaries, thus failing as meaningful units that do not predict the evolutionary history of the populations they represent (Zink 2004), violating the rule of reciprocal monophyly (Avis 2000).
- \* No island populations were included in the genetic study of Demboski (1999), Cook et. al (2001) and Demboski and Cook (2001). These studies did, however, find 2 highly divergent clades in Southeast Alaska with the northern clade (samples from Haines and Yakutat) probably represent a separate species.

\*/Myotis/\* spp.

- \* No bats have been documented on Suemez Island, but they should be inventoried. Potentially 4 species occur there: /Myotis lucifugus/ (in need of revision, with SE populations probably a separate coastal species, /M. /alascensis/-Tanya Dewey, Univ Michigan, PhD dissertation), /M. californicus/, /M. volans/, and /M. keeni/ (a rare north coastal endemic, \*Red listed in British Columbia\*) (MacDonald and Cook 1996; unpublished ms; Parker et al 1997). All are forest dependent.

\*/Mustela erminea/\*

- \* Two specimens have been preserved from Suemez Island, but they should be inventoried. Molecular phylogeographic analysis places them in divergent clade—these are distinctive and have very restricted distribution (Fleming and Cook 2002)!
- \* Part of the Queen Charlotte lineage, which is restricted to the



## B Response to Comments

COOK6  
conf.

Queen Charlotte Islands and the Prince of Wales Island complex. Based on morphological and genetic data, this ermine is probably a distinct species, */Mustela haidarum/*. This insular form has an extremely limited distribution worldwide.

*\*/Martes/\* spp.*

\* Marten have not been documented on this island with a specimen, but they apparently occur there. Suemez population may have been derived from introduced stocks from Prince of Wales Island (as */Martes americana/*), or are native there and thus would be included under the probably separate species, */M. caurina/*, the Pacific Coast Marten. That species has so far been found in Southeast Alaska only on Admiralty and Kuiu islands (Stone and Cook, 2001; Stone et al 2002; Small et al 2003; unpubl. data). Coastal */caurina/* are distinctive island endemics and every known island populations should be carefully monitored. Specimens of marten from Suemez should be screened using molecular genetic analyses to determine where this island supports */caurina/* or */americana/*.

*\*/Ursus americanus/\**

\* No specimens preserved from Suemez Island  
\* Suemez bears undoubtedly part of the highly divergent coastal lineage described by Stone and Cook (2000) and supported by Peacock (2004)  
\* Genetic data strongly suggest a taxonomic revision that is inclusive of Pacific Coast forms into a single subspecies (*/U. a. charlottae/*) or as a separate species (*/U. charlottae/*). Specimens of black bear from Suemez should be screened using molecular genetic analyses to determine which lineage is found on this island.  
\* Forest dependent carnivore in probable decline on some of the other islands in the archipelago (ADFG 2002).

*\*/Canis lupus/\**

Three specimens. These populations represent the limited coastal clade (Weckworth et al 2005; ms) now known only from SE Alaska (although probable in coastal BC as well). Members of this clade harbor a substantial portion of North American wolf genetic variability and impact should be assessed.

*\*Other species\**

\* */Lontra canadensis/* (not documented with specimen)  
\* */Mustela vison/* (one specimen)  
\* */Gdocoileus hemionus/* (one specimen)

PDF's of most cited papers can be found at  
<http://www.msb.unm.edu/mammals/Cook/cv.html#PUBLICATIONS>. Peacock's work at University of Nevada Reno on black bears is also notable.



Scratchings Sale-EIS Cook.doc SE-Pubs2006.doc

Re: Scratchings Timber Sale

I have reviewed the Draft Environmental Impact State for the Scratching Timber Sale on Suemez Island. My colleagues and I have worked extensively on wildlife issues on the Tongass for the past 16 years. That work involves field, museum, and molecular genetic analyses. I have mentored more than 15 graduate students and post-doctoral associates during that time in projects related to Tongass mammals. As a result of those studies, we have published more than 40 peer-reviewed papers (list appended) related to management and conservation of the mammals and biota of this region. It is on that basis that I make the following general and specific observations:

**General:** This review of wildlife is very weak and poorly grounded in the existing knowledge of the wildlife of the region (i.e., scientific literature).

**Specific Comments:** The statement few mammal species are found on Suemez Island due to geographic isolation and distance to the mainland is misleading in its implication of limited impact. First, the appropriate scientific authority for this statement should be cited (not Nowacki et al 2001). Geographic isolation also leads to endemism, but this issue is not discussed, even though it is central to the federal mandates of the USDA Forest Service, has been discussed heavily in the literature on the mammals of Suemez Island, and was one of the primary foci of recent TLMP wildlife review in Ketchikan.

This island has had minimal inventory effort for small mammals. Several of the mammals represent distinctive lineages that have limited distributions on islands along the North Pacific Coast. Below we detail what is essentially known for these species from this island. Please note that several species are forest associated. Among these, some are not documented or very poorly documented, precluding our ability to address whether they are endemic or not. Given the distinctiveness of some lineages (e.g., ermine, flying squirrel, and potentially the coastal marten) and their limited distributions worldwide, we urge a cautious (i.e., none) approach to development or logging on this island until these populations are assessed. Marten guidelines should have been used! At a minimum specimens of the potential endemic lineages should be screened using molecular genetic tools to determine their distinctiveness.

### *Glaucomys sabrinus*

- 28 specimens preserved at the University of Alaska Museum (UAM)
- Included in endemic subspecies *G. s. griseifrons*, Prince of Wales Flying Squirrel, based on nuclear and mitochondrial DNA (Bidlack and Cook 2001, 2002)
- Sensitivities: cumulative effects of timber harvests on a forest-dependent species and this subspecies found only on the heavily harvested POW complex of islands.

### *Microtus longicaudus*

- 7 specimens preserved (UAM)
- Included in Island Clade by Conroy and Cook (2000), which occurs from eastern Southcentral Alaska southward through the islands of the Alexander Archipelago of Southeast Alaska.

## B Response to Comments

- Taxonomic revision needed as *M. l. coronarius* (by name date priority) Swarth 1911 (Type Locality = Coronation Island).

### *Peromyscus keeni*

- 30 specimens
- Part of distinctive Prince of Wales Island Clade
- More extensive and detailed studies needed. Current taxonomy inadequate.
- 

### *Sorex monticolus*

- 23 specimens from Suemez Island (all UAM); none sequenced
- The limited genetic structure discovered from analysis of mtDNA from the Southeast Alaska region (Demboski 1999, Cook et al. 2001; Demboski and Cook 2001) is inconsistently related to current subspecies (and probably species) boundaries, thus failing as meaningful units that do not predict the evolutionary history of the populations they represent (Zink 2004), violating the rule of reciprocal monophyly (Avis 2000).
- No island populations were included in the genetic study of Demboski (1999), Cook et. al (2001) and Demboski and Cook (2001). These studies did, however, find 2 highly divergent clades in Southeast Alaska with the northern clade (samples from Haines and Yakutat) probably represent a separate species.

### *Myotis* spp.

- No bats have been documented on Suemez Island, but they should be inventoried. Potentially 4 species occur there: *Myotis lucifugus* (in need of revision, with SE populations probably a separate coastal species, *M. alascensis*—Tanya Dewey, Univ Michigan, PhD dissertation), *M. californicus*, *M. volans*, and *M. keeni* (a rare north-coastal endemic, **Red listed in British Columbia**) (MacDonald and Cook 1996; unpublished ms; Parker et al 1997). All are forest dependent.

### *Mustela erminea*

- Two specimens have been preserved from Suemez Island, but they should be inventoried. Molecular phylogeographic analysis places them in divergent clade—these are distinctive and have very restricted distribution (Fleming and Cook 2002)!
- Part of the Queen Charlotte lineage, which is restricted to the Queen Charlotte Islands and the Prince of Wales Island complex. Based on morphological and genetic data, this ermine is probably a distinct species, *Mustela haidarum*. This insular form has an extremely limited distribution worldwide.

### *Martes* spp.

- Marten have not been documented on this island with a specimen, but they apparently occur there. Suemez population may have been derived from introduced stocks from Prince of Wales Island (as *Martes americana*), or are native there and thus would be included under the probably separate species, *M. caurina*, the Pacific Coast Marten. That species has so far been found in Southeast Alaska only on Admiralty and Kuiu islands (Stone and Cook, 2001; Stone et al



2002; Small et al 2003; unpubl. data). Coastal *caurina* are distinctive island endemics and every known island populations should be carefully monitored. Specimens of marten from Suemez should be screened using molecular genetic analyses to determine where this island supports *caurina* or *americana*.

### *Ursus americanus*

- No specimens preserved from Suemez Island
- Suemez bears undoubtedly part of the highly divergent coastal lineage described by Stone and Cook (2000) and supported by Peacock (2004)
- Genetic data strongly suggest a taxonomic revision that is inclusive of Pacific Coast forms into a single subspecies (*U. a. charlotte*) or as a separate species (*U. charlotte*). Specimens of black bear from Suemez should be screened using molecular genetic analyses to determine which lineage is found on this island.
- Forest dependent carnivore in probable decline on some of the other islands in the archipelago (ADFG 2002).

### *Canis lupus*

Three specimens. These populations represent the limited coastal clade (Weckworth et al 2005; ins) now known only from SE Alaska (although probable in coastal BC as well). Members of this clade harbor a substantial portion of North American wolf genetic variability and impact should be assessed.

### Other species

- *Lontra canadensis* (not documented with specimen)
- *Mustela vison* (one specimen)
- *Odocoileus hemionus* (one specimen)

PDF's of most cited papers can be found at <http://www.msb.unm.edu/mammals/Cook/cv.html#PUBLICATIONS>. Peacock's work at University of Nevada Reno on black bears is also notable.

## B Response to Comments

SE Alaska Publications from Cook Lab (1996-2006)

### Manuscripts Published or In Press

1. Goethert, H. K., J. A. Cook, E. W. Lance, and S. R. Telford III. 2006. Fay and Rausch 1969 Revisited: *Babesia microti* in Alaskan small mammals. Journal of Parasitology. In Press.
2. Cook, J. A., N. G. Dawson, and S. O. MacDonald. In Press. Conservation of highly fragmented systems: the north temperate Alexander Archipelago. Biological Conservation.
3. Dawson, N. G., S. O. MacDonald and J. A. Cook. In press. Endemic Mammals of the Alexander Archipelago. In J. Schoen (ed). Wildlife Management on the Tongass National Forest. Audubon Special Publication.
4. Haas, G. E., J. R. Kucera, A. Runck, S. O. MacDonald, and J. A. Cook. 2005. Mammal Fleas (Siphonaptera) new for Alaska and the Southeastern mainland collection during seven years of a field survey of small mammals. Journal of the Entomological Society of British Columbia. 102:65-75.
5. Runck, A., and J. Cook. 2005. Post-glacial expansion of the southern red-backed vole (*Clethrionomys gapperi*) in North America. Molecular Ecology 14:1445-1456.
6. Weckworth B., S. Talbot, G. Sage, and J. Cook. 2005. A signal of independent Coastal and Continental histories among North American wolves. Molecular Ecology 14:917-931.
7. Tomasik, E., and J. Cook. 2005. Mitochondrial phylogeography and conservation genetics of wolverine (*Gulo gulo*) in Northwestern North America. Journal of Mammalogy 86:386-396.
8. Jarrell, G., S. O. MacDonald, and J. A. Cook. 2005. Checklist to the Mammals of Alaska. University of Alaska Museum. 5 pp.
9. MacDonald, S. O., A. M. Runck, and J. A. Cook. 2004. The heather vole (genus *Phenacomys*) in Alaska. Canadian Field-Naturalist. 118:438-440
10. Cook, J. A., A. Runck, and C. J. Conroy. 2004. Historical biogeography at the crossroads of the northern continents: molecular phylogenetics of red-backed voles (Rodentia: Arvicolinae). Molecular Phylogenetics and Evolution 30:767-777.
11. Lucid, M., and J. Cook. 2004. Phylogeography of Keen's mouse (*Peromyscus keeni*) in a naturally fragmented landscape. Journal of Mammalogy. 85:1149-1159.

12. Galbreath, K., and J. Cook. 2004. Genetic consequences of Pleistocene glaciations for the tundra vole (*Microtus oeconomus*) in Beringia. *Molecular Ecology* 13:135-148.
13. Murrell, B. P., L. A. Durden, and J. A. Cook. 2003. Host associations of the tick, *Ixodes angustus*, on Alaskan mammals. *Journal of Medical Entomology* 40:682-685.
14. Lessa, E. P., J. A. Cook, and J. L. Patton. 2003. Genetic footprints of demographic expansion in North America, but not Amazonia, following the Late Pleistocene. *Proceedings of the National Academy of Sciences, USA* 100: 10331-10334.
15. Demboski, J. R. and J. A. Cook. 2003. Phylogenetic diversification within the *Sorex cinereus* complex (Insectivora: Soricidae). *Journal of Mammalogy* 84:144-158.
16. Small, M.P., K. D. Stone, and J.A. Cook. 2003. American marten (*Martes americana*) population structure across a landscape fragmented in time and space. *Molecular Ecology* 12:89-103.
17. Stone, K. and J. Cook. 2002. Molecular evolution of the Holarctic genus *Martes*. *Molecular Phylogenetics and Evolution*. 24:169-179.
18. Pyare, S., W. Smith, J. Nicholls, and J Cook. 2002. Diet of northern flying squirrels, *Glaucomys sabrinus*, in southeast Alaska. *Canadian Field-Naturalist* 116:88-98.
19. Stone, K., R. Flynn, and J. Cook. 2002. Post-glacial colonization of northwestern North America by the forest associated American marten (*Martes americana*). *Molecular Ecology* 11:2049-2064.
20. Fleming, M. A. and J. A. Cook. 2002. Phylogeography of endemic ermine (*Mustela erminea*) in southeast Alaska. *Molecular Ecology* 11:795-808.
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22. Bidlack, A., and J. A. Cook. 2001. Reduced genetic variation in insular northern flying squirrels (*Glaucomys sabrinus*) along the North Pacific Coast. *Animal Conservation* 4:283-290.
23. Demboski, J., and J. Cook. 2001. Phylogeography of the dusky shrew, *Sorex monticolus* (Insectivora, Soricidae): Insight into deep and shallow history in northwestern North America. *Molecular Ecology* 10:1227-1240.



## B Response to Comments

24. Cook, J. A., A. L. Bidlack, C. J. Conroy, J. R. Demboski, M. A. Fleming, A. M. Runck, K. D. Stone, and S. O. MacDonald. 2001. A phylogeographic perspective on endemism in the Alexander Archipelago of the North Pacific. *Biological Conservation* 97:215-227.
25. Cook, J. A., and S. O. MacDonald. 2001. Should endemism be a focus of conservation efforts along the North Pacific Coast of North America? *Biological Conservation* 97:207-213.
26. Stone, K. D. and J. A. Cook. 2000. Phylogeography of black bears (*Ursus americanus*) from the Pacific Northwest. *Canadian Journal Zoology* 78:1-6.
27. Conroy, C. J. and J. A. Cook. 2000. Phylogeography of a post-glacial colonizer: *Microtus longicaudus* (Muridae: Rodentia). *Molecular Ecology* 9:165-175.
28. Demboski, J. R., K. D. Stone, and J. A. Cook. 1999. Further perspectives on the Haida Gwaii glacial refugium hypothesis. *Evolution* 53:2008-2012.
29. Conroy, C. J., J. R. Demboski & J. A. Cook. 1999. Mammalian biogeography of the Alexander Archipelago of Alaska: a north temperate nested fauna. *Journal of Biogeography*. 26:343-352.
30. MacDonald, S. O., and J. A. Cook. 1999. The Mammal Fauna of Southeast Alaska. University of Alaska Museum, Special Publication. 156 pp.
31. Demboski, J. R., B. K. Jacobsen, and J. A. Cook. 1998. Endemism in the Alexander Archipelago: an assessment of genetic variation in flying squirrels (Rodentia: *Glaucomys sabrinus*). *Canadian Journal of Zoology* 76:1771-1777.
32. Lance, E. W., and J. A. Cook. 1998. Phylogeography of tundra voles (*Microtus oeconomus*): Beringia region and southcoastal Alaska. *J. Mammalogy* 79:53-65.
33. Parker, D., B. Lawhead, and J. A. Cook. 1997. Latitudinal limits of bats in Alaska. *Arctic* 50:256-265.
34. Parker, D. and J. A. Cook. 1996. Keen's long-eared bat (*Myotis keenii*, Vespertilionidae) confirmed in Southeast Alaska. *Canadian Field-Naturalist* 110:611-614.
35. MacDonald, S. O., and J. A. Cook. 1996. The Land Mammal Fauna of Southeast Alaska. *Canadian Field-Naturalist* 110:571-599.
36. Parker, D., J. A. Cook, and S. Lewis. 1996. Effects of timber harvest on bat activity in southeastern Alaska's temperate rainforest. Pp. 277-292, in *Bats and*

Forests Symposium, R. Barclay and M. Brigham (eds), Res. Branch, Ministry of Forests, Victoria, 23:1-292.

37. The following papers are in a volume that can be obtained from the World Conservation Union (IUCN—Switzerland) at [www.iucn.org](http://www.iucn.org).
38. Yensen, E., D. J. Hafner, and J. A. Cook. 1998. Conservation priorities, action plans, and conservation strategies for North American rodents. Pp. 125-145, in North American rodents: action plans for species of conservation concern (D. J. Hafner, E. Yensen, and G. L. Kirkland, Jr., eds.). IUCN—the World Conservation Union, Gland, Switzerland.
39. Yensen, E., J. A. Cook, and D. W. Nagorsen. 1998. Rodents of northwestern North America. Pp. 5-9, in North American rodents: action plans for species of conservation concern (D. J. Hafner, E. Yensen, and G. L. Kirkland, Jr., eds.). IUCN—the World Conservation Union, Gland, Switzerland.
40. Demboski, J., G. Kirkland, and J. A. Cook. 1998. *Glaucomys sabrinus*. pp. 37-39 in D. J. Hafner, E. Yensen, and G. L. Kirkland, Jr. (eds). North American rodents: Status survey and conservation action plan. IUCN/SSC Rodent Specialist Group. Gland, Switzerland and Cambridge, UK. x + 171 pp.
41. Cook, J. A. 1998. *Spermophilus parryi* pp. 49-50 in D. J. Hafner, E. Yensen, and G. L. Kirkland, Jr. (eds). North American rodents: Status survey and conservation action plan. IUCN/SSC Rodent Specialist Group. Gland, Switzerland and Cambridge, UK. x + 171 pp.
42. Cook, J. A. 1998. *Marmota caligata*. pp. 39-40 in D. J. Hafner, E. Yensen, and G. L. Kirkland, Jr. (eds). North American rodents: Status survey and conservation action plan. IUCN/SSC Rodent Specialist Group. Gland, Switzerland and Cambridge, UK. x + 171 pp.
43. Conroy, C. J., and J. A. Cook. 1998. *Microtus longicaudus* pp. 93-95 in D. J. Hafner, E. Yensen, and G. L. Kirkland, Jr. (eds). North American rodents: Status survey and conservation action plan. IUCN/SSC Rodent Specialist Group. Gland, Switzerland and Cambridge, UK. x + 171 pp.
44. Cook, J. A. and G. Kirkland. 1998. *Clethrionomys gapperi* pp. 87 in D. J. Hafner, E. Yensen, and G. L. Kirkland, Jr. (eds). North American rodents: Status survey and conservation action plan. IUCN/SSC Rodent Specialist Group. Gland, Switzerland and Cambridge, UK. x + 171 pp.
45. Lance, E. W. and J. A. Cook. 1998. *Microtus oeconomus*. pp. 97-99 in D. J. Hafner, E. Yensen, and G. L. Kirkland, Jr. (eds). North American rodents: Status

## B Response to Comments

survey and conservation action plan. IUCN/SSC Rodent Specialist Group. Gland, Switzerland and Cambridge, UK. x + 171 pp.

46. MacDonald, S. O. and J. A. Cook. 1998. *Castor canadensis*. pp. 59-60 in D. J. Hafner, E. Yensen, and G. L. Kirkland, Jr. (eds). North American rodents: Status survey and conservation action plan. IUCN/SSC Rodent Specialist Group. Gland, Switzerland and Cambridge, UK. x + 171 pp.

### Manuscripts Submitted or In Revision

Weckworth, B., S. Talbot, J. A. Cook. In revision. Tracking Wolves (*Canis lupus*) across North America with Signatures of Genetic Footprints.

### Related Reports and Articles Published

1. Weintraub, E. L., and J. A. Cook. 1995. *Microtus oeconomus elymocetes*. U.S. Fish and Wildlife Service, Endangered Species Status Report. 37 pp.
2. Cook, J. A. 1995. The University of Alaska Mammal Collection. Cultural Resource Management 18:15-16.
3. Cook, J., N. Dawson, S. MacDonald, and A. Runck. 2004. Mammal Diversity: Inventories of Alaska National Parks Stimulate New Perspectives. Alaska Park Science.
4. Conroy, C.J., J. A. Cook, S. O. MacDonald, and K. J. Bagne. 1993. Discovery of black morph *Peromyscus* in Southeast Alaska. *Peromyscus Newsletter* 15:30-31.
5. Cook, J. A., E. P. Hoberg, A. Koehler, S. O. MacDonald, H. Henttonen, L. Hardman, V. Haukioja, J. Laakkonen, J. Niemimaa, K. Galbreath, F. Chernyavski, N. Dokuchaev, A. Lahzhtkin, A. Tsvetkova, E. Waltari, A. Runck, A. Hope, N. Dawson, A. Veitch, R. Popko, E. Jenkins, S. Kutz, R. Eckerlin and D. Goade. 2005. Beringia: Intercontinental exchange and diversification of high latitude mammals and their parasites during the Pliocene and Quaternary. *Mammal Science*. 30:S33-S44

### Graduate Student Projects (Cook Lab) Focused on the Tongass or Chugach NF

Ellen Weintraub Lance, M. S. (1995) Phylogeographic variation and the island syndrome in holarctic tundra voles (*Microtus oeconomus*).

Doreen Parker, M. S. (1996) Forest ecology and distribution of bats in Alaska.

Allison Bidlack, M. S. (2000) Phylogeography and population genetics of northern flying squirrels (*Glaucomys sabrinus*) in Southeast Alaska.

John Levino-Chythlook, M.S. (2000). Systematics of three-spined stickleback (*Gasterosteus aculeatus*) in Alaska.

Amy Runck, M.S. (2001) Molecular and morphological perspectives on post-glacial



- colonization of *Clethrionomys rutilus* and *Clethrionomys gapperi* in Southeast Alaska.
- Kurt Galbreath, M.S. (2002) genetic consequences of ice ages for a Holarctic rodent.
- Michael Lucid, M.S. (2003) Phylogeography of Keen's mouse (*Peromyscus keeni*) in a naturally fragmented landscape.
- Byron Weckworth, M.S. (2003) Phylogeography and population dynamics of wolves (*Canis lupus*) in the Pacific Northwest.
- Eric Tomasik, M.S. (2003) Mitochondrial phylogeography and conservation genetics of wolverine (*Gulo gulo*) in northwestern North America.
- Chris Conroy, Ph.D. (1998) Molecular phylogenetics of arvicoline rodents
- John Demboski, Ph.D. (1999) Molecular systematics and biogeography of long-tailed shrews and northern flying squirrels
- Karen Stone, Ph. D. (2000) Molecular evolution of martens
- Eric Waltari Ph. D. (2005) Phylogeography of two Beringian mammal complexes.
- Sandra Talbot, Ph. D. (2006) co-advised. Molecular genetics of brown bears.
- Amy Runck, PhD. (expected 2006). Molecular genetics of a contact zone in the North Pacific.
- Natalie Dawson, PhD (In progress). Conservation genetics of three insular carnivores.
- Anson Koehler, MS (In progress). Phylogeography of *Sobolophyme baturini*, a nematode of coastal marten.

## B Response to Comments

### Responses to COOK, Joseph A. Cook

**COOK 1** – The comment refers to the statement in the Draft EIS that few mammal species occur on Suemez Island. This sentence has been corrected to state that relatively few mammals occur on the Island. Nowacki et al. (2001) states that relatively few mammals occur on Suemez Island due to the geographic isolation. The mammals that do reside within this outer island complex, of which Suemez Island is part, include the dusky shrew, northern flying squirrel, Keens mouse, long-tailed vole, ermine, wolf, river otter, Sitka black-tailed deer and mink (see MacDonald and Cook 1996).

The Forest Plan Interagency Conservation Strategy Review group draft report (April 10-14, 2006 p.9) states that the Forest Plan represents a balanced plan with an acceptable level of risk for ensuring continued species viability. The draft report further states that the reserve network serves multiple conservation purposes. They are intended to maintain viable populations of old growth associated species as well as meet NFMA requirements. The Forest Plan Standard and Guidelines for endemics is to maintain habitat to support viable populations and improve knowledge of the rare or endemic species. Where distinct taxa are located design projects to provide for their long-term persistence. Appendix K provides guidelines for the old growth reserve system and pertaining landscape connectivity is discussed on p. 4-118 of the Forest Plan.

The Interagency Conservation Strategy Review group draft states (April 10-14, 2006p. 54) report that there have been five endemic species identified on the Tongass National Forest: the Alexander Archipelago wolf, Alaska bat, wolverine, Pacific Coast marten, Haida ermine and the Prince of Wales flying squirrel. According to the draft report, the dusky shrew and Island long-tailed vole have been determined not to be endemic. This report further states that conversion of watersheds to a managed habitat status will favor the Keens mouse (Interagency Conservation Strategy Review group draft report, April 10-14, 2006 p. 54).

More discussion on small mammals has been added to the Wildlife section of Chapter 3 of the Final EIS.

**COOK 2** - Small mammal surveys were conducted on Suemez in 1993, 1998 and 1999. A total of 25 flying squirrels (24 in 1998 and 1 in 1999), 1 ermine (1998), 19 *Sorex* (13 in 1999 and 6 in 1993), 6 *Microtus* (1 in 1993 and 5 in 1999) and 3 wolves (3 in 1999) were found. The table for 1998 (The University of Alaska 1998 Field Season-Southeast Alaska Table) says numerous keens mouse, vole and shrews were caught as well but does not give an actual number of specimens. The surrounding islands that have had small trapping on them include Noyes, Lulu, Cone, San Fernando, St. Ignace, Long, Sukkwan, Shelikof, Dall, Baker, Forrester and POW.

## Response to Comments B

**Table showing small mammal numbers from Suemez Island and nearby Islands**

	Flying Squirrel	Marten	Keens	<i>Sorex</i>	<i>Microtus</i>	Wolf	Ermine
POW	104	77	340+	97+	38	106	0
Suemez	25	0	3+	19+	6+	3	1
San Fernando	0	0	64	38	0	0	0
Dall	0	0	110+	10+	3+	0	0
Noyes	0	0	15	9	2	0	0
Baker	0	0	4	1	0	0	0
Cone	0	0	8	0	0	0	0
Long	0	0	0		0	0	0
Lulu	0	0	0	3	0	0	0
Forrester	0	0	0	22	0	0	0
St. Ignace	0	0	18	0	0	0	0
Shelikof	0	0	0	2	0	0	0
Sukkwan	0	0	0	4	0	0	0
Total	129	77	562+	205+	49	109	1

Data from *The Small Mammals of Southeast Alaska 1993 Field Season Interim Report*. S.O. MacDonald, J.A. Cook, p. 8 and 9. The University of Alaska 1998 Field Season-Southeast Alaska Table (this is the table that does not give numbers for the Keens mouse, long-tailed vole or dusky shrew). *The Mammal Fauna of Southeast Alaska*. S.O. MacDonald and J. A. Cook. 1999. pp. 16-17; 29 -30; 34-37; 46; 54-55; 58; and 66. USDA Forest Service 1993 trapping information for Cone and Baker Islands Craig project folder.

In the Interagency Conservation Strategy Review group draft report (April 10-14, 2006. p. 56), it discusses the level of trapping effort needed. Dr. Cook stated that it varies but that he felt 30 specimens for each distinct population would be adequate. As can be seen in the above table except for the ermine this number of specimens has been met or exceeded.

Small mammals were also trapped between 1957 and 1965 in the Maybeso Experimental Forest on Prince of Wales Island. Small mammals that were trapped include *Peromyscus maniculatus hylaeus* (Osgood), *Sorex obscurus longicauda* (Merriam) and *Microtus longicaudus littoralis* (Swarth). From the table on page 5 it appears that approximately 569 *Peromyscus* were trapped, 71 *Microtus*, and 160 *Sorex*. These numbers are not included in the table above.

**COOK 3** – The Forest Plan Conservation Strategy was designed to ensure population viability of all species, especially those associated with old-growth forests. The Forest Plan (p. 3-411) allocated all islands smaller than 1,000 acres were to non-development LUDs to eliminate risks to habitat loss or alteration from timber harvest. This was done to address specifically the restricted range endemics that may occur on only one or a few isolated islands. On page 3-413 of the Forest Plan, it says that assuming that the loss of productive old growth is the greatest risk facing old growth associated species then those species most closely associated with it are



## B Response to Comments

assumed to be at the greatest risk. MacDonald and Cook (1994) (as cited in the 1997 Forest Plan) concluded that the Keens mouse was associated with generalized habitat and that voles (*Microtus*) were restricted to herbaceous and shrub dominated habitats. Dawson, in her letter to the Forest Service in response to the Scratchings EIS, says that "ermine are not old growth obligates" and that "they depend on marshy areas found along forest edges between old growth and long grass meadows".

Parts of Suemez Island have been allocated to development LUDs that do allow timber harvest. Only within these development LUDs are timber harvest activities proposed. Our calculations for fragmentation indicate that only the northeast portion of Suemez has any significant degree of fragmentation other than that which naturally occurs on the island (See the Fragmentation section of Chapter 3). The patch size analysis for the Draft EIS indicates that there still will be one patch (patch #2) on the Island over 10,000 acres in size after the proposed harvest. The other large patch (patch #1) will decrease from the current acreage of 9,583 to 7,696 under Alternative 2. All the other action alternatives will result in this patch remaining above 8,000 acres in size. See Tables 3OG-1 through 3OG-4 for effects to patch sizes. The calculations for the Final EIS show that the amount of POG remaining as a result of the Scratchings EIS will range from 21,386 acres (no action alternative) to 19,907 acres under Alternative 2. See table 3OG -5 for effects to POG harvest for each alternative. The patch size analysis was not rerun between the Draft EIS and the Final EIS for this project. The modification made to Alternative 4 in the final EIS will result in less impact to the patch sizes (i.e. the remaining patch sizes will be larger) than what was analyzed for the Draft EIS.

No endemic species currently are listed as a threatened, endangered, candidate or sensitive species.

**COOK 4** – The marten standards and guidelines, which require structure retention by harvest unit, do not apply on Suemez Island. These standards and guidelines apply only high-risk biogeographic provinces. Suemez Island is not located in a high-risk province. See page 4-118 and 4-119 of the Forest Plan.

**COOK 5** –For this EIS, we did not collect specimens and screen them using molecular genetic tools to determine distinctiveness because that level of analysis is not needed because sufficient habitat for endemic species will be maintained due to the Forest Plan Conservation Strategy.

The Interagency Conservation Strategy review group (April 2006) was asked what areas were priorities for consideration for the Forest Plan adjustment. Their response was the marten on Kuiu and the Prince of Wales complex, with Suemez being mentioned specifically by MacDonald (The Interagency Conservation Strategy review group (April 10-14, 2006 p. 58). The draft of this workshop on pages 108 and 109 discusses what considerations were put forth the various groups present at the workshop. If these considerations are incorporated into the revised Forest Plan, then we may decide to collect specimens and have the specimens screened using molecular genetic tools (see Table in response Cook #2). However, this is not needed for the decision maker for this project to make a reasoned decision based on the analysis and maintenance of sufficient habitat for viable endemic populations.

**COOK 6** - Thank you for the information on endemic and other wildlife species.



## CASCADIA WILDLANDS PROJECT ALASKA FIELD OFFICE

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September 17, 2006

Thorne Bay/ Craig District Rangers  
Tongass National Forest  
ATTN: Scratchings Timber Sale project  
POB 19001  
Thorne Bay, AK 99919-0001

VIA EMAIL: [comments-alaska.tongass-thorne-bay@fs.fed.us](mailto:comments-alaska.tongass-thorne-bay@fs.fed.us)

Dear District Rangers,

Please consider these comments of Cascadia Wildlands Project, and myself as an individual, regarding the Scratchings Timber Sale project Draft Environmental Impact Statement (DEIS), dated June 2006. The proposed action is to log 1,936 acres of old growth rainforest, estimated to yield 42 mmbf, and build about 19 miles of road.

Our primary interest here is conservation of the temperate old growth rainforest ecosystem that once blanketed almost the entire Cascadia bioregion—from California to Kodiak. The relatively intact old growth forests of the Alexander Archipelago, including especially this project area, represents an invaluable legacy that we whole-heartedly desire to pass on to future generations. This place is a source of wealth to us in terms of clean water, clean air, recreation, wildness, fishing, and subsistence values. Haven't we taken enough?

We are also particularly interested in conservation of wild salmon habitat. Wild Pacific Salmon are the keystone species in this ecosystem. They, like the trees, have been nearly decimated over the past 150 years of aggressive exploitation. Salmon fishing is a mainstay of the local economy. Fishing is a sustainable, relatively stable foundation that feeds people, trees, and all the critters in between. Will this still be true after we are gone?

**CWP1** | Please adopt Alternative A, the "No Action," or what is essentially a restoration alternative. There is no need to cut this forest. We have enough wood available from other sources, and not enough public old growth. This forest is most valuable left standing.

### **Watersheds**

**CWP2** | Please place utmost value on salmon habitat conservation. Salmon play a critical role in the productivity of this ecosystem. (USFS 1999, Wipfli 1998) When fish suffer, that causes a ripple

## B Response to Comments

effect through the rest of the forest. These indirect and cumulative impacts should be considered. For example, less abundant salmon may make deer a relatively more important food source to wolves and bears.

The FEIS does contain some good analysis of watershed impacts. The FEIS notes the low-elevation streams on West Suemez Island "contain valuable fish habitat and abundant fish populations." (DEIS, p.3-92) It describes many (but not all) of the harms caused by roads, wetland destruction and logging.

The DEIS highlights that cumulative impacts of the proposal could be very bad. Thank you for disclosing the "high volumes of management caused erosion and sedimentation in the Dolores watershed." (DEIS, p.2-95).

**cwp 3** | Coho salmon and trout in particular are likely to suffer through stream bank degradation, loss of big trees, loss of nutrients, and siltation as a result of logging and roads (Bustard & Narver 1975, Jones & Grant 1996). This is a strong argument for the Restoration Alternative.

**cwp 4** | The DEIS relies on Best Management Practices way too much and way too blindly to control negative impacts to watersheds. BMPs are being treated like some kind of new breakthrough. They are not. It should be self-evident that BMPs will be implemented. Why wouldn't they be? This is no reason to stop considering negative impacts of roads. According to Beschta et al. (2004)

"It is perhaps widely accepted that "Best Management Practices" (BMPs) can reduce damage to aquatic environments from roads. However, time trends in aquatic habitat indicators indicate that BMPs failed to protect salmonid habitats from cumulative degradation by roads and logging (Espinosa et al. 1997). Ziemer and Lisle (1993) noted a lack of reliable data showing that BMPs are cumulatively effective in protecting aquatic resources from damage. Although road location, design, construction, and maintenance may have improved over the years, many tens of thousands of kilometers of roads remain on public and private lands that were constructed with relatively low concern for their environmental consequences... Until problem "legacy roads" are improved (e.g., surfaced, stabilized, obliterated) they will continue to degrade water quality and aquatic systems for many years. Furthermore, the assumption that road obliteration or BMPs will offset the negative impacts of new road and landing construction and use is unsound since road construction has immediate negative impacts and benefits of obliteration accrue slowly."

Reliance on the TLMP and BMPs is particularly unwarranted because past logging and roading has violated them extensively, and those same conditions seem to exist. Over 100 acres of RMA have been logged, yet RMA buffers are still relied on to protect water quality and preserve connectivity. Fish passage has been repeatedly blocked by roads in the past, the maintenance backlog remains, and proposed roads won't even be classified, yet road maintenance is assumed to protect fish.

**cwp 5** | Impacts to headwater streams are particularly bad, because the TLMP doesn't protect them, and standard BMPs generally attach very little value to them. The DEIS follows this pattern of



CWP 5 | basically ignoring small streams. This proposed action would clearcut numerous small streams, which will cause substantial degradation of salmon habitat. According to Murphy (1995):  
 cont. "Small streams are the 'backbone' of salmonid habitat. Even when not used because of barriers or steep gradients, small, even intermittent streams are critical to downstream fish habitats because they transport water, sediment, and woody debris from the upper watershed." (Murphy 1995, p.xvi)

CWP 6 | The DEIS improperly tiers to the Suemez Island Watershed Analysis. Impacts need to be considered in the EIS.

Logging of small streams is a major concern that is brushed aside in the Draft. The DEIS behaves as though 25% of the watershed logged at one time is the only critical threshold, when logging of even a few small headwater streams WILL degrade water quality. These negative impacts should be considered. A recent literature review by ADF&G found an abundance of evidence that logging, roading and disturbance of headwaters streams degrades fish habitat downstream.

"There are four major features of small headwater streams that could have implications for anadromous and high value resident fish species in these and higher order streams. Headwaters, even those that do not contain fishes, are potentially important sources of sediments, water, nutrients, and organic matter to downstream areas that do contain fish" (Clark 2004)

Degraded watersheds produce fewer fish. If there are fewer fish getting born, then fishermen catch fewer adults. This is a concrete result that needs to be considered. The fact that one can never a finger on, say, a particular landslide or erosion from a specific road decreasing a catch on a particular commercial opener, does not mean that it doesn't occur. Fishermen will catch fewer fish and make less money as a result of this timber sale. Cumulative impacts need to be considered in that decreased fish returns pass critical thresholds, beyond which commercial fishing is closed altogether. A timber sale could cause, say, 100 fewer silvers to return, which could tip the balance away from an ADF&G announcement of an opener.

## Transportation

CWP 7 | The DEIS does not provide a thorough transportation analysis, as required under the new Roads Rule. There is some mention of a logging system and transportation analysis (LSTA), but the approach being taken to transportation management is unclear. The description of Roads Analysis process improperly tiers to a past island roads analysis, and fails to offer new analysis that is in compliance with NEPA.

CWP 8 | Why are there no alternatives for transportation? Aside from road construction, the DEIS totally ignores issues of transportation management. Why not obliterate more roads? Why not close more? What impact would any of that have? These questions deserve answers.

CWP 9 | I'd like to particularly recommend that proposed roads in Dolores watershed be dropped, that the 1080700 system be obliterated for connectivity concerns.

CWP 10 | Maps don't indicate which roads are open or closed. Please be sure to map ALL roads.

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CWP11 | Listings of mitigation measures in road cards are not the hard look at transportation that is required.

CWP12 | The DEIS says road surveys have identified problem culverts and other problems (@3-97) but doesn't reveal where, or offer alternatives to solve the problems. In fact, it appears red pipes will be used for this timber sale, and only be pulled (theoretically) afterward. This is the wrong approach. Yet more money is being poured into building roads for the timber industry, at public expense, while the existing road system is neglected.

CWP13 | Thanks for including some financial information regarding maintenance and construction costs. A key missing piece of this puzzle is the maintenance backlog. Please reveal the situation in the project area.

CWP14 | The DEIS fails to meet 36 CFR 212 minimum requirement of road system which establishes requirements for the administration of the forest transportation system, including roads, trails, and airfields, and for the provisions for acquisition of rights-of-way. It also describes a minimum road system and requires a science based roads analysis to plan the road system and to set funding priorities.

This is not the minimum road system. It does not meet statutory and regulatory requirements (e.g. Water Quality Standards due to sediment), reflect long-term funding expectations (deferred maintenance), or prevent adverse environmental impacts.

CWP15 | Please obliterate as many roads as possible, and don't build any new roads.

CWP16 | Ditch relief culverts aren't as good as pulling culverts and obliterating the road. Please, at a minimum, evaluate alternatives to reveal their effectiveness and environmental impacts.

CWP17 | "Temporary" roads are increasingly being used by the Forest Service as a way to do an end-run around known negative impacts of roads. This is inappropriate. If you are going to build a road, then build it and maintain it. Storage is a commendable mitigation measure, but, in the end, you won't be able to dance around the fact that you've built a road.

Truly "temporary" roads need to be obliterated. The proposal puts most of them into storage. Perhaps a more accurate term would be "intermittent roads," or maybe, "permanently temporary roads." Call them whatever you want, but please consider that there are long-term impacts.

CWP18 | There is no such thing as a temporary road on wetland. Pouring shotrock onto a wetland turns it into something else. Old-growth forest generally doesn't grow back onto old road. It won't be a wetland or an old-growth forest again in our lifetimes. If you don't want to call it a "road" for legal purposes, then call it a "linear pile of gravel." Whatever—but don't pretend it will disappear.

CWP19 | The use of "temporary" roads, as opposed to classifying the same proposed routes, would have the result that these roads won't get maintenance attention or funding, which greatly increases potential negative environmental impacts. "Temporary" roads save money on maintenance only because maintenance isn't done. This is neglect, not savings.



**CWP 20** "Temporary" roads have significant, negative impacts that need to be considered. This strategy of storage and roadbuilding is a nifty legal trick, but is untested ecologically. Building and storing roads repeatedly is likely to cause significant impacts. According to a recent study:  
 Accelerated surface erosion from roads is typically greatest within the first years following construction although in most situations sediment production remains elevated over the life of a road (Furniss et al. 1991; Ketcheson & Megahan 1996). Thus, even "temporary" roads can have enduring aquatic impacts. Similarly, major reconstruction of unused roads can increase erosion for several years and potentially reverse reductions in sediment yields that occurred with non-use (Potyondy et al. 1991). Where roads are unpaved or insufficiently surfaced with erosion resistant aggregate, sediment production typically increases with increased vehicular usage (Reid & Dunne 1984)..."

**CWP 21** The DEIS repeatedly assumes that monitoring and maintenance of roads will be first-rate and adequately funded, when experience strongly counsels otherwise. This is particularly critical with regard to impacts to watersheds. As the high number of fish passage barriers discovered here during the last review revealed, unintended consequences are more typical than the exception. There is currently a huge backlog of road maintenance on the Tongass, and it is probable that will continue. Unclassified "temporary" roads won't even make the list to be monitored, let alone receive funding to do maintenance when it is necessary.

**CWP 22** The DEIS ignores impacts of re-construction of existing roads, and of closing "temporary" roads. Neither of these is included in the transportation management plan. Both of these things will increase sediment and disturb soils. Roads that are closed by alder now, would have to be opened before they're closed.

**CWP 23** While it is implicit in the "temporary" road strategy, the DEIS fails to consider the funding backlog for road maintenance. Building, reconstructing, maintaining and closing all these roads is going to cost money—money which is going to come out of other road maintenance projects. Please quantify this impact. How much will this road-work cost? How much is available? How far behind are you?

**CWP 24** The cumulative effects section (@ 3-163) is particularly weak. Windthrow, watershed, funding and other impacts of roads over time are a critical issue. How can you formulate an overall transportation plan here without a serious cumulative effects analysis?

**CWP 25** Helicopter access needs to be integrated into the overall transportation management plan. Landings and maintenance areas should be established, mapped and maintained.

## Helicopters

**CWP 26** I'm very disappointed that the Draft EIS didn't take advantage of the opportunity to consider the impacts of helicopter logging, especially on wildlife. In fact, it doesn't consider any negative impact from helicopters at all, excepting the money expense. Copters are very disturbing, particularly to birds like goshawks. They also damage residual stands. Copters invariably involve fuel and oil spills, and involve more risk of large spills because of much greater volumes



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of fuel involved. They are also perhaps less safe for operators, and employ fewer people. Please consider these impacts using the substantial literature that's available.

### Deer

- CWP 27 | Deer are obviously a critical subsistence species that deserves primary consideration. Deer would be negatively impacted by the proposed logging and roadbuilding through direct habitat loss, fragmentation, and other mechanisms (Alaback 1982, Yeo & Peck 1992, Kirchhoff 1990, Kirchhoff 2003) with corresponding, cascading impacts to wolves and subsistence users (Boertje & Stephenson 1992).
- CWP 28 | The DEIS relies *entirely* on the HSI computer model to consider impacts to deer. This model is a useful tool, but as the only source of information is plainly inadequate and misleading. There is substantial discussion, disagreement, and misunderstanding related to use of this model. None of this is disclosed, and we don't know whether past mistakes have been cleared up here. I don't know the details of this specific computer simulation, and we don't want to. I assume y'all are professionals and honest and did everything as best you could, and better than anyone else. However, just running numbers through a computer does not meet NEPA's requirements to consider and disclose relevant information. The 9<sup>th</sup> Circuit recently ruled against the Forest Service in a similar situation, explaining:
- CWP 29 | "The Forest Service's heavy reliance on the WATSED model in this case does not meet the regulatory requirements because there was inadequate disclosure that the model's consideration of relevant variables is incomplete. Moreover, the Forest Service knew that WATSED had shortcomings, and yet did not disclose these shortcomings until the agency's decision was challenged on the administrative appeal. We hold that this withholding of information violated NEPA, which requires up-front disclosures of relevant shortcomings in the data or models." *Lands Council v. Powell* 379 F.3d 738 (9<sup>th</sup> Cir. 2004)
- CWP 30 | Also, the model is being used to estimate the absolute number of deer in the project area, to show that it meets ADF&G population targets, which isn't what the model is designed to do. The model gives a theoretical *maximum* carrying capacity. In deep snow winters, the actual number of deer will certainly diminish. A certain HSI score does not mean that that number of deer are actually there. It might be half that. Or twice that. Please do and disclose field checks and on-ground surveys of deer habitat, including consultation with ADF&G, area hunting guides, and tribes.
- CWP 31 | I hereby adopt comments of Greenpeace, et. al., on this project, in regards to continuing Forest Service misuse of the deer model.
- CWP 32 | The DEIS seems to be missing a critical aspect of cumulative impacts to deer, that is, the dramatic reduction in available forage during stem exclusion stages. The classic study by Paul Alaback (1982) found that from regeneration until a good century after a clearcut, forests here have little nutritional value to deer. He concludes,  
"Maintenance of the most productive forests in the aggradation stages of development (0-100 yr) through forest management will minimize the development of a productive vascular understorey and thus deprive herbivores of forage during 70-80% of the forest rotation." (Alaback 1982)

### Marten

- CWP 33 | The proposal would significantly harm Marten, who are already stressed from a variety of factors. Again, the DEIS relies exclusively on the HSI model to consider impacts to marten.
- CWP 34 | The DEIS doesn't consider the synchronistic impacts to Marten of increased roads, increased trapping pressure from the camp and roads, and decreased habitat. All of these negative impacts together could be very substantial. The impact of camp mobilization and operation needs to be considered with regard to all of the issues. Camp mobilization can make a significant dent in the marten population. This impact is compounded by the fact that loggers would have access to the entire road system, including "temporary" roads. The DEIS never considers the peak road density.
- CWP 35 |

### Wolves

- CWP 36 | The DEIS misuses the Person model for wolves. First, it is used exclusively, without any other data or information. Second, it shares the same problems as the deer model, on which it is based. Third, the model is not supposed to be used to determine actual numbers, just compare alternatives.
- CWP 37 | High road densities are worrying with regard to wolves. What is the difference between high elevation and low elevation road density, with regard to wolves? The TLMP requirements regarding road density don't make this distinction.
- CWP 38 | The DEIS improperly limits consideration to only *open* road miles, a limit not shared by the Person model. It also never considers maximum road density.
- CWP 39 | Roads provide travel corridors for wolves, increasing their success at hunting deer. Great for wolves in the short term, but not so great for deer, or for wolf populations over the long term. Wolves don't care whether a road is termed "temporary" or classified.

### Logging Economics

- CWP 40 | The DEIS ignores the cumulative impacts of logging on other landownerships with regard to logging economics. Yet, this consideration is critical to the TTRA and TLMP mandates to supply a steady flow of economic timber sales. The Forest Service is a minority logger in this region, with the University of Alaska, Alaska Mental Health Trust, Sealaska Corp., and the State of Alaska all offering substantial volume.

### Subsistence

- CWP 41 | We regard subsistence as the highest, best human use of this land.
- The Draft EIS seems to regard continued degradation of subsistence opportunities as acceptable and necessary. We strongly disagree. It is not too late to change direction with regard to forest management, and conserve subsistence opportunities for future generations. Subsistence will die only if we kill it. Please, lets not.

## B Response to Comments

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Thanks for considering these comments. Please continue to keep us apprised as this project moves forward, and send a paper copy of the Final EIS and Decision when it becomes available.

**Cwp 42** | **Cumulative Effects**  
The DEIS offers an inadequate consideration of cumulative effects.

Thank you for thoughtfully considering these comments. Please send me a hard copy of the FEIS and Decision, and keep me apprised as this project moves forward.

Sincerely,

Gabriel Scott  
Alaska Field Representative  
Cascadia Wildlands Project



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## **B Response to Comments**

### **Responses to CWP - Cascadia Wildlands Project, Gabriel Scott**

**CWP 1** – Your preference for Alternative 1 is noted. The Purpose and Need (p. 1-4) section of the Scratching project provides a clear and brief explanation of the need for this project at this time. Regarding your comment on “wood availability” -- this comment addresses a forest planning issue and largely is outside the scope of this project level EIS. The Scratchings timber sale is an important component of the Tongass Timber Reform Act (TTRA) goal for the Tongass timber sale program to seek to meet market demand to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources. Please see the discussion included as Appendix A.

**CWP 2** - The Final EIS acknowledges the importance of salmon (e.g. in Issue 2, in the Wildlife, Biodiversity, Watersheds and Fisheries, Essential Fish Habitat, and Subsistence sections). The Final EIS describes indirect and cumulative effects on fish habitat and wildlife; the Forest Supervisor has considered these effects in making his decision.

**CWP 3** – The Final EIS (Watershed and Fisheries, Essential Fish Habitat sections) describes the effects of the alternatives and explains how riparian buffers and other Best Management Practices will minimize these effects in all action alternatives. Your characterization of Alternative 1 (no action) as a “restoration alternative” is noted. No specific restoration activities are proposed in the “no action” alternative. Restoration opportunities are not forfeited under any alternative.

**CWP 4** - Site-specific application of Best Management Practices, with a monitoring and feedback mechanism, is the approved strategy for controlling nonpoint source pollution caused by timber harvest and roads. This is supported by State of Alaska and federal agency regulations and policies. In their memo of September 7, 2006 (published in this appendix), the State concurred with the “water quality and fisheries aspects” of the Scratchings DEIS. Neither the State, nor the EPA, in their comment letter on this Draft EIS (published in this appendix), questioned the efficacy of the BMPs described in the Draft EIS. Tongass National Forest BMP monitoring results indicate a high success rate in BMP implementation. Monitoring results, including progress on BMP effectiveness monitoring in the Tongass National Forest, are reported annually. The Final EIS Watersheds and Fisheries section clearly distinguishes between the effects of past practices and the effects of current practices. The Final EIS acknowledges that past practices of riparian harvest and culvert installation contributed to degraded fish habitat. Current Forest Plan standards and guidelines, including BMPs, riparian buffers, and standards for fish passage through culverts, offer a much higher level of fish habitat protection. The Forest Supervisor considered the cumulative effects of past and current practices in his decision.

**CWP 5** – Forest Plan standards and guidelines (and the Final EIS Watersheds and Fisheries section) explicitly acknowledge the importance of headwater streams and their influence on aquatic habitat. The Scratchings Timber Sale will buffer all fish streams and all Class III headwater streams in accordance with the Forest Plan. Class IV streams do not have direct influence on downstream water quality or fish habitat; they are protected by BMPs that minimize ground disturbance.

**CWP 6** – The Final EIS cites the Suemez Island Watershed Assessment because it is a detailed report of field data collection and assessment highly relevant to the environmental impact



statement. It provides the basis for characterizing the current watershed environment. The Watershed Assessment report is not a decision document. The Final EIS Watersheds and Fisheries section describes headwater stream protection and evaluates direct, indirect and cumulative impacts. The Forest Supervisor considered this information in his decision.

**CWP 7** – The complete Suemez Island Roads Analysis is included in the project planning record. In addition, a Roads Analysis for all Maintenance Level 1 and 2 roads for Craig and Thorne Bay Ranger Districts completed in 2005 is included in the project planning record. Definitions of maintenance levels can be found in the Suemez Island Roads Analysis. The Road Management Objectives in the road cards in the Scratchings project record depict road management plan for the area.

**CWP 8** – As shown in Table 3TR-2 Alternatives 1 through 5 have different proposals for road construction. All action alternatives have the same amount of road to be stored or decommissioned to meet the anticipated future needs on Suemez Island. Each action alternative stores or decommissions about 11 miles of road on Suemez Island. All newly constructed roads will be put into storage. The Suemez Island Roads Analysis has further information regarding road management on Suemez Island.

**CWP 9** – Alternative 4 represents an alternative with minimal roads in the Dolores watershed. Many of the roads in the 1080700 system are scheduled for storage. This includes all newly constructed roads and existing roads 1080740, 1080750, 1080751, and 1080760, which is approximately 2.4 miles of road. The Road Management Objectives in the road cards in the Scratchings project record represent the road management plan for the area.

**CWP 10** – Maps located in the Suemez Island Roads Analysis display the current status of the National Forest System Roads on Suemez Island and the plans proposal for future travel management on the island. A map has been added to the Final EIS (Figure 3TR-1) showing the objective maintenance level for the National Forest System roads.

**CWP 11** – In addition to the mitigation measures listed on the road cards, the effects of roads have been analyzed for all affected resources and is included in Chapter 3 and the resource reports.

**CWP 12** – The specific locations for problem culverts and other road related problems are identified in the road condition surveys. Copies of these surveys are located in the project record. Many of the problems on the existing road system are being addressed. A contract to store about 6 miles of road and remove about 70 culverts on Suemez Island has recently been awarded with the work scheduled to be completed in 2007. This includes the removal of 11 fish passage barriers. The Travel Management Plan for Suemez Island removes the remaining fish-passage-barrier-culverts. The Road Management Objectives in the road cards in the Scratchings project record represent the road management plan for the area.

**CWP 13** –A contract to store about 6 miles of road and remove about 70 culverts on Suemez Island has been awarded with the work scheduled to be completed in 2007. This work along with annual maintenance will reduce the backlog of deferred maintenance. The reported deferred maintenance for FY2006 was \$293,791.

**CWP 14** –The complete *Suemez Island Roads Analysis – Access and Travel Management Plan* is included in the project record. This project used an authorized science-based roads analysis process as described in the report Roads Analysis: Informing Decisions About Managing the



## B Response to Comments

National Forest Transportation System (USDA Forest Service, 1999, Misc. Report FS-643).

This process is further described in 36 CFR 212 and FSM 7700 - Transportation System Chapter 7710 - Transportation Atlas, Records, And Analysis. Up to 18 miles of National Forest System road will be placed in storage or decommissioned and all culverts inhibiting fish passage will be removed. Deferred maintenance needs will be addressed through road storage, road decommissioning, and road maintenance.

**CWP 15** – The complete *Suemez Island Roads Analysis – Access and Travel Management Plan* is included in the project record. This analysis identifies the minimum road system for Suemez Island. Roads are identified for storage, decommissioning, or to be open for motorized vehicles. Road storage and decommissioning activities can refer to the same on the ground activities. In the Coastal Zone Management Act MOU between the State of Alaska and USDA Forest Service, Alaska Region storage is defined as *Remove or bypass all drainage structures to restore natural drainage patterns, add water bars as needed to control runoff, revegetate. This is intended to be the primary maintenance strategy applied on intermittent use roads during their closure cycle. In this strategy, bridges and culverts on live streams are completely removed to restore natural drainage patterns. Cross drains and ditch relief culverts will be bypassed with deep water-bars but left in place to minimize the cost of reusing these roads in the future. Due to the isolated nature of the road system, which makes maintenance costly and difficult, and their infrequency of use, storage is the most appropriate strategy for these roads. Maintenance Level 1, closure and basic custodial maintenance, is assigned. Storage eliminates car and truck use, and discourages use by other motor vehicles. This level of maintenance is synonymous with FRPA closed roads.* As many roads as practicable are being placed in storage or decommissioned. Of the 28 miles of National Forest System road on Suemez Island, 18 will be stored or decommissioned and 10 will remain open.

Alternative 1 in the Final EIS analyzes not building any new roads on Suemez Island and not storing any of the existing roads

**CWP 16** – Those roads scheduled for decommissioning would have all drainage structures removed. For maintenance level 1 roads, that is, stored roads are available for use at a future date, ditch relief culverts may be left in place with waterbars placed adjacent to the culverts if felt to be more effective.

Decommissioning means the road is not planned to be used in the foreseeable future; storage means the road is planned for use at a future date. A National Forest System Road is placed in storage when it is intended for use at a later date. It is decommissioned when it is no longer needed for future use; it is then no longer considered a road and is removed from the system. All temporary roads are decommissioned after a timber harvest project is complete, since they are not intended for future use. Decommissioning can mean a wide range of actions from obliteration to blocking the entrance and returning the streams to their natural flow patterns. Storage and decommissioning can refer to the same on-the-ground actions, as is the case in this project. Both storage and decommissioning for this project would involve the following three functions: (1) block the entrance to the road, (2) remove drainage structures so streams return to their natural streambed, and (3) place water bars in the roadbed as needed to direct water runoff from the road surface.

**CWP 17** – Road terminology can be confusing. The term “temporary road” is not used to reflect a negligible impact on the environment, but is used to mean the road is only planned to be used

for one timber sale and then decommissioned. Temporary roads are defined as roads that are built and used only once for a specific short-term purpose, in this case logging a unit or several units, and then decommissioned. National Forest System Roads are roads built for the long term with a future purpose in mind. Temporary roads are built to the minimum necessary standards to satisfy environmental concerns and to get the specific job done. They are usually of minimum width, less than a classified road, and have a minimum of fill material placed on the surface. In contrast to classified roads that are built wider and with a more permanent deep fill base. Thus, temporary roads leave a smaller footprint on the land. The term “maintenance” is used to signify that a road will be kept up for future use as is expected for a National Forest system road. A temporary road is decommissioned after its intended use. In this state, it will revegetate back to its natural state.

**CWP 18** – The effects of constructing roads on wetlands is described in the wetlands section of Chapter 3.

In Southeast Alaska, reforestation does occur on roads unless there is sufficient motorized traffic to prevent vegetation establishment. Since Suemez Island is not connected to a community and all vehicles need to be barged or boated to the road system, there is little vehicle traffic.

**CWP 19** – Please see response to CWP 16. No maintenance is needed for temporary roads once they are decommissioned since they are allowed to revegetate naturally. All culverts are removed and drainage patterns restored.

**CWP 20** – The Final EIS Watersheds and Fisheries section describes the effects of temporary roads and road erosion.

**CWP 21** – It is true that there is a backlog of road maintenance on the Tongass. However, the Craig Ranger District is attempting to place in storage or decommission many of our infrequently used roads in the system to help balance the maintenance backlog. A contract to remove about 70 culverts on Suemez Island has recently been awarded. This includes the removal of 11 fish passage barriers. The Suemez Island Travel Management Plan includes the removal of the remaining fish-passage-barrier-culverts after the timber sale contract is completed.

The decommissioning of temporary roads is monitored as part of the timber sale contract. In addition, temporary roads are not usually monitored after decommissioning. It has been found that revegetation occurs quickly after decommissioning and problems with water quality are alleviated

**CWP 22** – This information is discussed in the Soils and Watershed sections of Chapter 3 in the Draft and Final EISs. The reconstruction of existing roads will increase sediments and disturb soils, but only temporarily. The use of BMPs minimizes these impacts. Storage or decommissioning of roads helps the roads to revegetate and revert back to a more natural state. Sometimes a road does have to be re-opened to place it properly into storage or to decommission it. The temporary effects to soils and water quality as a result of such actions is justified by the long-term benefits of proper storage or decommissioning.

**CWP 23** - The money for backlog road maintenance comes from a different source than the money used for road activities in a specific timber sale. This project proposes alternatives where some roads would be placed in storage or decommissioned. This reduces the maintenance backlog, by putting these roads in a less costly maintenance category. Any temporary roads used



## B Response to Comments

for the timber sale are constructed by the purchaser and decommissioned by the purchaser before the timber contract work is accepted as complete.

The historic funding level for road maintenance for all National Forest Roads on Craig and Thorne Bay ranger districts is approximately \$750,000 per year; this varies with appropriations and budgets. Maintenance monies are spent on projects with the greatest need. This means that some years the roads in the project area will not receive any maintenance. The maintenance cost for maintenance level 2 roads is about \$810 per mile annually.

Maintenance Level 1 roads (National Forest system, in storage) require periodic surveys to identify problems. Maintenance Level 2 roads (National Forest system, open, high-clearance vehicles) receive brushing, grading, ditching, and periodic surveys. The timber contractor that is using the roads maintains temporary roads. It is part of the timber contractor's operation cost. There are no regular periodic surveys performed on decommissioned roads.

**CWP 24** - The complete *Suemez Island Roads Analysis – Access and Travel Management Plan* is included in the project planning record and was based on the process described in CWP 14. In addition, a Roads Analysis for all Maintenance Level 1 and 2 roads for Craig and Thorne Bay Ranger Districts was completed in 2005 and is included in the project planning record. The cumulative effects of roads on other resources are analyzed within the those sections of the EIS rather than in the transportation section.

**CWP 25** - Helicopter logging uses landings on existing roads or newly constructed landings (see unit cards in the Scratchings project record), and existing sort yards. Timber operators work with Forest Service sale administrators to establish helicopter access areas that are tailored to their individual needs.

**CWP 26** - It is true that the noise generated by a helicopter may be disturbing to some wildlife species, including the goshawk; however, there are no timber harvest units planned near the four known goshawks nests. All Forest Plan standards and guidelines relevant to goshawks will be applied to any goshawks nests that are discovered at any time on Suemez Island.

The fueling of helicopters and fuel storage are governed by the timber sale contract, which includes necessary measures to reduce the potential of spills and to provide measures to decrease effects if any do occur.

The aspects of helicopter logging as they relate to safety are considered and helicopter logging is generally not used if conventional ground-based systems and feasible road access can be used. In Alternative 4, helicopter logging was proposed instead of road access to decrease the effects on the watershed. Differences in employment between different logging systems are taken into account within the NEAT model. All of these factors are considered by the responsible official when making the decision on the project.

**CWP 27** – Deer was chosen as a project MIS for the reasons you mention. Please see the effects analysis for deer, wolves and subsistence in Chapter 3.

**CWP 28** - The analysis for Scratchings does use the deer model to consider impacts to deer since it has been peer reviewed and is our best information to show differences between alternatives. Please see responses to SCS 63 through 69 for more information on the deer model. .

**CWP 29** - Please see responses to SCS 63 through 69 for more information on the deer model.



**CWP 30** – You are correct that the deer model displays a theoretical carrying habitat capability. The deer model estimates the number of deer per square mile so that a comparison of effects between alternatives could be made. The HSI scores and acres of each habitat quartile again were calculated to be able to compare effects by alternative. Stand exams were conducted throughout the project area to check the condition of the stands in the field. Deer pellet surveys are done in the spring in conjunction with ADF&G. Because of the terrain, dense vegetation and inaccessibility, wildlife population numbers are costly and difficult to obtain in Southeast Alaska. ADF&G relies on hunter success trends to regulate changes needed to succeeding hunting seasons.

**CWP 31** – Please see responses to SCS 62 through 69.

**CWP 32** – The reduction of forage at the stem exclusion phase is an integral part of the deer model. The model acknowledges an initial increase of forage and then reduces the HSI value after a certain age based on the stand conditions (aspect, snow level, elevation) to account for the closure of the stand and resultant forage decline.

**CWP 33** - The marten model was not run for this project. The marten standards and guidelines aimed at providing extra structure within openings do not apply on Suemez Island, as it is not located in a high-risk biogeographic province. See page 4-118 and 4-119 of the Forest Plan. However, structure retained for riparian management areas, beach fringe, unstable slopes, and deferred areas to meet scenery standards and guidelines may also benefit some wildlife species such as marten.

**CWP 34** - You are correct these factors were not considered for marten for this project. Suemez Island is not located in a biogeographic province that has been identified as high risk for marten and structural standards and guidelines do not apply. Trapping on Suemez Island is intermittent and has not been identified as a area that receives high trapping pressure.

Marten is now discussed in the endemic section of the Final EIS. It is true that the roads on Suemez may provide increased access to marten populations although the motorized access will be reduced under the action alternatives. The overall road density for Suemez Island, when considering all roads (except temporary), is currently 0.49 miles/mile<sup>2</sup> and would decrease to 0.18 miles/mile<sup>2</sup> if an action alternative is selected. It is expected that a floating logging camp would be used as it had been in the 1990's and loggers would not have vehicles to trap after hours.

**CWP 35** – The highest NFS road density during the life of the project for the Island will occur under Alternative 2. The road density as a result of this alternative is 0.7 mile of road per square mile and would occur after all the roads needed to access timber harvest units were constructed. This is the density when considering all NFS roads on Suemez except temporary roads. At the end of the project, the road density will be about 0.2 miles of road per square mile for all alternatives except the no-action alternative where the road density will remain 0.49 miles per square mile.

**CWP 36** - The Forest Plan deer model was used to evaluate the effects to wolves since Sitka black-tailed deer are the wolves primary prey base in Southeast Alaska. Although it is not designed for use at the project scale, it provides a comparison between alternatives and also compares the existing condition of the available habitat with the effects of the alternatives. It is not used to determine populations.

## B Response to Comments

Consultation occurred with ADF&G to determine that wolf mortality on Suemez Island was not a concern.

**CWP 37** - The road density calculated below 1200 feet is from Forest Plan (Appendix 14 to Appendix N and Person). The Forest Plan recommends an open road density of 0.7 - 1.0 mi/mi<sup>2</sup> to protect wolf population viability (Forest Plan 4-116). However, by looking only at open roads, Forest Plan guidelines may underestimate the effects of roads in any particular geographic area (Tongass National Forest, Forest-Level Roads Analysis, and January 2003). Person (1996 and 2001) lists limiting construction of new roads and effectively closing existing roads as management actions that address risks to wolf populations.

The Scratchings EIS acknowledges that temporary roads will have short-term impacts (i.e., until they naturally revegetate). Total road densities, which include all existing roads (open and closed), fall within the range of 0.7 - 1.0 mi/mi<sup>2</sup>. The peak road density for the island will occur under Alternative 2. The road density as a result of this alternative is 0.7 miles of road per square mile. At the end of the project, the road density will be about 0.18 mile of road per square mile.

Wolves use very large areas of land. Consequently, the Forest Plan directs us to do the evaluation impacts from roads for wolves at the Biogeographic Province level. This analysis shows very little impact to wolves from road density. Additionally, we are discussing an island that is not tied to a community or the Alaska Ferry system. It is difficult to bring vehicles to this island, especially during the winter months when wolves are harvested. While possible, there is little likelihood. Several hunting parties do bring four-wheelers to Suemez and have done so for many years. This use has not increased, remaining relatively stable.

**CWP 38** - Forest Plan direction is to use open road density to consider reducing wolf mortality where it has been determined through analysis that road access has been proven to significantly contributed to wolf mortality (Forest Plan p. 4-116).

**CWP 39** - The road density calculations for Suemez for the Final EIS have been done considering all National Forest System Roads on the island, regardless of elevation and open or closed status. Temporary roads were not included in the road density calculations for wildlife. See Table 3W-11 and 3W-12 for total road densities.

**CWP 40** - Although the State of Alaska has offered more volume in the last few years, the landholding of the State is small compared to the Tongass National Forest. Timber volume from the Tongass accounts for about 65% of the volume processed locally with some mills relying 100% on National Forest timber. Timber from Native Cooperation lands, such as Sealaska, is generally not offered for purchase by local mills and is exported as raw log exports. TTRA (Tongass Timber Reform Act) does not apply to other ownership and explicit to the Tongass National Forest. The cumulative effects of timber economics is best analyzed at the regional level and has been analyzed at the Forest Plan level. The Scratchings Final EIS is tiered to this analysis.

**CWP 41** - We agree that subsistence use of the land is very important. Subsistence opportunities are expected to remain similar to the present condition. While there will be slightly less deer habitat capability, many of the high-value habitat areas will remain and be protected within Old Growth reserves, beach fringe and the Special Interest Area, see Map 3W-1. Road closures will reduce the motorized access in some areas where this access now exists. Please see the Subsistence section of Chapter 3.

## Response to Comments B

**CWP 42** – The Scratchings Final EIS includes a detailed discussion of cumulative effects for each key issue and for each resource. Please see the discussions of cumulative effects in Chapter 3.



## B Response to Comments

Dennis Sylvia/Planning Staff  
Thorne Bay/Craig Ranger Districts  
Attn: Scratchings Timber Sale Project  
P.O. Box 19001  
Thorne Bay, AK 99919

Dear Dennis Sylvia and Planning Staff,

I am writing in regards to the Scratchings Timber Sale DEIS which is to be located on Suemez Island. As a biologist in the region with a primary focus on endemic mammals, I feel that the DEIS inadequately addresses the presence and potential presence of endemic mammals on Suemez Island. I am a PhD student in southeast Alaska whose work focuses on endemic mammals throughout the Tongass, namely ermine, marten and black bear. I have had the opportunity to work on Suemez Island. Unlike many other islands in the Prince of Wales Archipelago, it still has a large number of old-growth areas, productive corridors within stream watersheds, and healthy forest buffers between low-productive muskeg, which is a large portion of the island. My primary concerns for this timber sale include: 1) the inadequate mammal surveys on the island, 2) the lack of emphasis on the geographic isolation and insularity of the island, and 3) alteration of a habitat that is known to be important for many mammal species.

### 1) Inadequate mammal surveys on the island.

Small mammal surveys were conducted in 1993 by the University of Alaska Museum. Those surveys were done over 13 years ago and during the summer months, when it is hard to catch ermine in traps. The best time to survey for carnivores are the winter months, due to the scarcity of natural prey items. The two day survey done in 2000 is not complete enough to draw any conclusions about presence of ermine on Suemez Island, since many animals are trapped after six or seven trap nights. Given that the bait was stolen from one trap, it likely indicates that an ermine found its way in to the trap, and did not spring it. A FS funding request in 1997 also mentions the presence of ermine on Suemez, yet nothing was done to follow up on the wildlife accounts; "Ermine have been seen on Suemez Island by district personnel at various times over the years." Without proper surveys for this endemic mammal, the Tongass National Forest risks the chance of reducing the habitat for an already scarce carnivore. The ermine, *Mustela haidarum*, that is present on Suemez, is a member of a lineage found only within the POW complex (Prince of Wales, Suemex, Heceta) and QCI (Queen Charlotte Islands). It is found nowhere else in the world (Fleming and Cook 2002).

DAWSON 1

Marten (*Martes americana* and *Martes caurina*?) have been identified on the island by several local trappers, and although marten have been trapped on Suemez, none have been documented at the University of Alaska Museum. The biogeographic regions of "high risk" were identified in an arbitrary manner without any regard to actual information on island size, isolation, or endemism (Gene Degayner pers. Comm.). This was discussed heavily at the Conservation Strategy Review meetings in Ketchikan (April 2006). According to our work, Suemez Island is a biogeographic region of high concern due to the endemic mammals found in the region (Cook et al. in press). No logging

DAWSON 2

DAWSON 2 | activity should occur without taking this into consideration, and endemic mammals were  
cont. | hardly mentioned in the DEIS. If marten due exist on Suemez Island, they may be  
| relictual populations of the endemic marten, *Martes caurina*, that is rare to southeast  
| Alaska and currently has a known distribution limited to Admiralty and Kuiu Islands.

DAWSON 3 | The marten Standards and Guidelines were not applied to this timber sale, even though  
| there are marten on the island, and there is a chance they are the rare, endemic lineage.  
| The biogeographic regions of risk put forward in the Tongass Land Management Plan  
| (1997) have proven to be inadequate measures of the complexity of mammal species  
| across the Tongass and have proven to misrepresent areas of highest concern for endemic  
| mammals. Kuiu Island is another example of a region of high biogeographic concern that  
| did not have Marten Standards and Guidelines applied due to the TLMP provision.

## 2) Lack of emphasis on geographic importance of Suemez Island

DAWSON 4 | The Draft EIS mentions the lack of mammals on Suemez Island because it is  
| geographically isolated. This statement is incorrect because it dismisses Suemez Island  
| based on location, when it has been shown in the scientific literature that islands most  
| distant from the mainland also tend to have higher numbers of endemic organisms, as  
| well as evolutionarily distinct populations of organisms that are ecologically and  
| evolutionarily distinct from their mainland counterparts. Suemez Island has proven to  
| have multiple endemic mammals present (see Dr. Joe Cook's comment on the DEIS for  
| the Scratchings sale for examples) and this should be enough evidence to reference in the  
| Draft EIS.

## 3) Alteration of a habitat important to many mammal species

As stated above, there are many mammal species dependent on the intact habitat on Suemez Island. Although ermine are not old-growth obligates, their major food source, voles and mice, are forest-obligates. They depend on marshy areas found near natural springs, or at forest edges between old-growth and long-grass meadows. These areas on Suemez are already scarce, given the lack of edge habitat on most shorelines of the east part of Suemez Island. Many of the timber sale units would further reduce these natural edge habitats, and many of the units are within small watersheds where these small mammals have been trapped.

DAWSON 5 | Suemez Island is also a special circumstance because it represents one of the most outer  
| islands in the Alexander Archipelago. It harbors many endemic mammals that cannot  
| travel to other islands if their habitats are displaced on Suemez. Much of the Suemez  
| lowlands are muskeg, which has been proven to be biological "desert" for mammals,  
| even for the common species such as the keen's mouse (*Peromyscus keeni*). They rely on  
| the corridors of forest habitat between muskeg. Many timber sale units are placed in  
| these very productive corridors.

DAWSON 6 | In conclusion, it is necessary, by mandate, for the Forest Service to conduct inventories  
| for endemic mammals in proposed sale units. Unfortunately, inadequate surveys seem to  
| give the Forest Service a false sense of security about how much damage will be done to  
| mammal populations with these timber sales. We are not suggesting that no cutting occur  
| anywhere on the archipelago, only that we stop using minimal trapping effort to

## B Response to Comments

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DAWSON 7 | formulate misconstrued conclusions about endemics. We also need to make sure to apply  
marten standards and guidelines to any island where marten are known to be present,  
which is not currently being done by the Forest Service. I would also like to see further  
DAWSON 8 | mention of endemic mammals in the Draft EIS and how the Forest Service plans to deal  
with the further isolation that this timber sale will cause to the populations of mammals  
on Suemez island. We recommend no cutting on Suemez Island until we have done a  
DAWSON 9 | thorough inventory of endemic mammals, and even then, given the small size and  
isolation of the island, it should be done in a responsible manner with as little clearcutting  
as possible.

Sincerely,

Natalie Dawson  
PhD Candidate  
University of New Mexico  
159 Castetter Hall  
Department of Biology  
Albuquerque, NM 87131  
(505) 277-6715



### Responses to DAWSON – Natalie Dawson

**DAWSON 1** – Please see response to COOK 2.

**DAWSON 2** – Please see response to COOK 4.

**DAWSON 3** – Please see response to COOK 4.

**DAWSON 4** – Please see response to COOK 1.

**DAWSON 5** – Connectivity and corridors were considered at the landscape level and at the project level. The juxtaposition and connectivity of habitat patches is an important element in habitat effectiveness. More discussion concerning connectivity and corridors has been added to the Scratchings Final EIS. Also, see the discussion in the Scratchings Final EIS on patch size. The patch size analysis for the Final EIS indicates that even after the proposed harvest for this project there will still one patch (Patch #2) on the island that will remain over 10,000 acres in size. The other large patch (Patch #1) will decrease from the current acreage of 9,583 to 7,696 under Alternative 2. All the other action alternatives will result in this patch remaining above 8,000 acres in size. See Tables 3OG-1 through 3OG-4 for effects to patch sizes. The calculations for the Final EIS show that the amount of POG remaining as a result of the Scratchings Final EIS will range from 21,386 acres (no action alternative) to 19,907 acres under Alternative 2. See Table 3OG-5 for effects to POG harvest for each alternative.

As a result, of on going field reconnaissance on Suemez the proposed timber units continue to decrease in size. This means that a wider corridor width will likely be maintained.

**DAWSON 6** – Please see response to COOK 2.

**DAWSON 7** – Please see response to COOK 4.

**DAWSON 8** – More information on endemic mammals has been added to the Final EIS. See Dawson 5 for information on patch size, which indicates that large patches will still be available and further isolation is unlikely to occur.

**DAWSON 9** – Please see response to COOK 2. The harvest prescriptions for the proposed units for the Scratchings project use clearcuts where justified and two-aged stands in more windfirm units. Please see the Timber and Vegetation section of the EIS or the specific unit cards for more information on harvest prescriptions.

# B Response to Comments



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10  
1200 Sixth Avenue  
Seattle, WA 98101

September 18, 2006

Reply To  
Attn Of: ETPA-088

Ref: 05-037-AFS

Dennis Sylvia, Planning Staff Officer  
ATTN: Scratchings Timber Sale  
USDA Forest Service  
Thorne Bay Ranger District  
P.O. Box 19001  
Thorne Bay, AK 99919-0001

Dear Mr. Sylvia:

The U.S. Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (EIS) (CEQ No. 20060323) for the Scratchings Timber Sale Area, Tongass National Forest, in accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. This Section specifically directs EPA to review and comment in writing on the environmental impacts associated with all major federal actions. Under our policy and procedures, we also review the adequacy of the draft document in meeting procedural and public disclosure requirements of NEPA.

The draft EIS proposes a no action and four action alternatives that include timber harvest, road construction and road maintenance activities on Suemez Island in the Tongass National Forest, AK. Alternative 2 proposes timber harvest on 1,932 acres of forestland, road maintenance on 20 miles of existing roads, 6 miles of temporary road construction, and 13 miles of new road construction. Alternative 3 is the proposed alternative and would include timber harvest on 1391 acres of forestland, road maintenance on 20 miles of existing roads, 5 miles of temporary road construction, and 8 miles of new road construction. Alternative 4 would consist of timber harvest on 1,195 acres of forestland, road maintenance on 20 miles of existing roads, 3 miles of temporary road construction, and 4 miles of new road construction. Alternative 5 would include timber harvest on 1,011 acres of forestland, road maintenance on 20 miles of existing roads, 4 miles of temporary road construction, and 6 miles of new road construction.

EPA 1 EPA has rated the draft EIS as Environmental Concerns – Inadequate Information (EC-2), consistent with EPA's rating system (enclosed). EPA's primary concern is the potential cumulative adverse impacts on water quality and high quality salmon fisheries from this project. Selection of the Proposed Alternative (Alternative 3) would increase the cumulative percent harvest to as high as 54% in some watersheds. In particular, past timber harvest and road building in the Dolores, West and East Watersheds have occurred to such an extent to adversely impact productive fisheries.

The draft EIS states that there are potential erosion and sedimentation concerns in the Dolores, Refugio, West, Arena, and Lotana Watersheds. The water quality concerns in the Dolores, Refugio, and West watersheds are due to past timber harvest and road construction activities and those in the Arena and Lotana Watersheds are due to natural disturbances. The highest volumes of management-caused erosion have occurred in the Dolores Watershed.

We are particularly concerned with the activities proposed in the Dolores Watershed, since it has not fully recovered from past timber harvest and road construction. The draft EIS indicates that sedimentation has adversely affected the salmon fishery and that the watershed is experiencing a slower rate of recovery than is typical for streams this area. All three tributaries and the mainstem show a loss of fish habitat which may be due to a lack of adequate woody debris, sedimentation, accelerated erosion due to landslides, and lack of channel complexity. In addition the draft EIS states that the watershed is predicted to further degrade before it begins to recover.

EPA 2 Each proposed alternative would approximately double the cumulative percent harvested trees in the Dolores Watershed. Although BMPs would be applied to minimize the effects of timber harvest and road building on water quality, including the use of riparian buffers, the draft EIS states that Dolores Watershed would have the greatest risk for altered water yield. The rationale for including management activities in the Dolores watershed is not clear, since it has not recovered from past activities and this project would potentially increase the water quality degradation currently present. We recommend that the final EIS discuss the feasibility of avoiding timber harvest in the Dolores Watershed.

EPA3 We commend the U.S. Forest Service for including an alternative in the EIS that minimizes activities in the Dolores Watershed by eliminating certain harvest units and proposing the use of helicopter logging instead of building new roads. Alternative 4 would address some of the cumulative water quality concerns by reducing timber harvest and road construction. If management activity cannot be avoided in the Dolores Watershed, EPA recommends the selection of Alternative 4, since it would meet the purpose and need of the project while causing the least environmental impacts and would allow the streams in the Dolores Watershed to recover more fully prior to future harvests.

EPA4 Table 3WA-3 indicates that proposed harvest in the Headwaters, Mini, Dolores, and Verde Watersheds would result in more than 25% cumulative percent harvested, with a value in the Mini Watershed as high as 54%. Except for the Verde Watershed and Mini Watershed (which is not discussed in the Section on Individual Watersheds), these watersheds, although they are small in area and contain no Class I and II streams, have had past damage from timber harvest and road building which has lead to soils being exposed to erosion and sedimentation in streams.

In the journal article, Large Wood Recruitment and Redistribution in Headwater Streams in the Southern Oregon Coast Range, USA. (May, Christine J., et. al., Can. J. For. Res., 33: 1352-1362 (2003)), the authors found that stream size and topographical setting strongly influence processes that recruit and redistribute wood in channel networks. They concluded that upland forests and headwater streams can influence water quantity and quality, invertebrate and detritus inputs, sediment retention, and physical habitat characteristics throughout the drainage



## B Response to Comments

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EPA 4  
cont.

network. Because small streams can be abundant and tightly coupled with steep hillslopes, they can form an important link between hillslope and fluvial processes and between terrestrial and aquatic ecosystems. They recommend that forest management not rely solely on wood recruitment from riparian buffers along larger fish bearing streams. Since the streams in these watersheds are characterized as small, high density streams within steep hillslopes, we recommend that the final EIS discuss the potential effect the high cumulative percent harvest may have on wood recruitment, sediment input, and water quantity and quality in larger fish-bearing streams downstream.

EPA appreciates the opportunity to comment on the draft EIS for the Scratchings Timber Sale. If you would like to discuss issues related to our review, please contact me at (206) 553-1601.

Sincerely,



Christine B. Reichgott, Manager  
NEPA Review Unit

cc: Kevin Hanley, Alaska Department of Environmental Conservation, Division of Water

### Responses to EPA – Environmental Protection Agency, Christine B. Reichgott

**EPA 1** – EPA’s rating of the Draft EIS as Environmental Concerns – Inadequate Information (EC-2) is noted. EPA’s primary concern is the potential cumulative adverse impacts in water quality and high quality salmon fisheries from this project. Short-term increases in sedimentation are expected to follow road building and timber harvest. However, the temporary increase in sediment delivery is not expected to degrade water quality or fish habitat in any watershed in any of the proposed alternatives. Design measures described in unit and road cards in the project record, including the implementation of best management practices (BMP) are expected to maintain water quality within standards established by the State of Alaska. Please see water quality and fisheries discussion in Chapter 3.

**EPA 2** – An alternative that did not include any timber harvest in the Dolores Watershed was considered but was not analyzed in detail, since it would adversely affect project economics, and analysis showed that timber harvest could be accomplished while meeting Forest Plan Standards and Guidelines (see Chapter 2, Alternatives Considered but Eliminated From Detailed Study). Additionally, management activities are proposed in the Dolores Watershed to meet the Scratching project’s purpose and need (see Chapter 1) and these activities do meet the Forest Plan standards and guidelines. Alternative 4 was designed to limit harvest and new road construction in the Dolores Watershed in order to protect resources. Harvest was planned in the watershed only in areas where minimal impacts to fish, hydrology and soil resources might occur. As a result, no new fish stream crossings are proposed under this alternative within the Dolores watershed. Alternative 4 was modified between Draft and Final EIS in response to comments about the economics of the alternative. These adjustments further reduced the effects of this alternative on the Dolores watershed.

**EPA 3** – EPA’s recommendation for the selection of Alternative 4, which poses the least impact to streams in the Dolores Watershed, is noted and will be considered with all other factors by the responsible official when making the decision

**EPA 4** –A description of the Mini Watershed has been added to the individual watershed descriptions in the Final EIS. The Final EIS acknowledges the influence of headwaters on downstream fisheries and describes the use of headwater stream buffers to reduce impacts.

## B Response to Comments



**UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration**

*National Marine Fisheries Service*

*P.O. Box 21668*

*Juneau, Alaska 99802-1668*

August 25, 2006

Dennis Sylvia  
Planning Staff  
Thorne Bay/Craig Ranger Districts  
Tongass National Forest  
P.O. Box 19001  
Thorne Bay, AK 99919-0001

RE: Scratchings Timber Sale, Draft  
Environmental Impact Statement

Dear Mr. Sylvia:

The National Marine Fisheries Service (NMFS) has reviewed the Scratchings Timber Sale Draft Environmental Impact Statement (DEIS). The Scratchings Timber Sale Area is located on Suemez Island west of Prince of Wales Island and southwest of Craig, Alaska. The project area includes parts of Value Comparison Units (VCUs) 6330, 6340, 6350, and 6360. The Forest Service proposes to harvest 42 million board feet (MMBF) of timber on 1,932 acres of National Forest System land in Alternative 2. Alternative 2 would require 19 miles of new road construction (13 miles National Forest System road and 6 miles temporary). Alternative 3 is the preferred alternative, which emphasizes economic timber harvest. Alternative 3 proposes harvest of 29 MMBF on 1,391 acres with 13 miles of new road construction (8 miles National Forest System road and 5 miles temporary). Alternative 4 addresses concerns about cumulative impacts to the Dolores watershed. Alternative 4 proposes harvest of 24 MMBF on 1,195 acres with 7 miles of new road construction (4 miles National Forest System road and 3 miles temporary). Alternative 5 addresses the roadless area issue. Alternative 5 proposes harvest of 22 MMBF on 1,011 acres with 10 miles of new road construction (6 miles National Forest System road and 4 miles temporary).

Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) requires Federal agencies to consult with NMFS on all actions that may adversely affect Essential Fish Habitat (EFH). NMFS is required to make conservation recommendations, which may include measures to avoid, minimize, mitigate or otherwise offset adverse effects. For the purposes of this project, EFH includes all segments of streams where salmon reside during any life stage or period of the year, and the marine waters and substrates of Port Refugio, Ulloa Channel, Bucareli Bay, Port Dolores and Port Santa Cruz. The streams in the project area provide important habitat for pink, chum, and coho salmon. The marine waters provide important habitat for a number of groundfish species including Pacific cod, arrowtooth flounder, Pacific Ocean perch, walleye pollock, dusky rockfish, shortraker and rougheye rockfish, yelloweye rockfish, sablefish, flathead sole, rex sole, sculpin and skate.

The Scratchings Timber Sale would adversely affect both freshwater and marine EFH. Regarding freshwater EFH, twenty-one watersheds would be harvested, and all alternatives would exceed 20 percent of the watershed harvested within the past 30 years for the Dolores,



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Headwaters, Santa Cruz, Mini Verde and West watersheds. The additional harvesting proposed under the action alternatives would increase the number of watersheds exceeding the 20 percent threshold from one to six. The 20 percent harvest level is considered a threshold of concern in third order watersheds which triggers a more intensive watershed analysis prior to additional disturbances. A watershed assessment (Prussian 2005) is referenced in the DEIS, but was not provided to NMFS as part of our review. According to the DEIS, Prussian (2005) found that past management activities in the headwaters of the Dolores, East and West watersheds have resulted in higher rates of windthrow and excessive erosion of v-notches and that these actions have impacted productive fish streams. This downward trend is a concern for existing and future fish habitat along a portion of the mainstem of the Port Dolores watershed. In addition, Prussian (2005) notes specific cases of erosion and Geier model projections for potential fish habitat degradation for the Headwaters, West, Verde, Refugio and Santa Cruz watersheds. Of particular concern is a reported failure of 40% of a Class III stream buffer on the northern unit of the West watershed that resulted in sedimentation reaching a fish stream. The DEIS unit cards have recommended additional buffer widths where streams would be at risk from windthrow.

NMFS 1

Alternative 4 was designed to mitigate for the potential impacts to the Dolores watershed by eliminating some proposed road construction in the vicinity of Dolores Creek, deferring the harvest of some steep slopes, and changing some cable harvest areas to helicopter logging. Due to this higher percentage of helicopter yarding compared to the other alternatives, Alternative 4 would result in a reduced expected bid price and is not the preferred alternative.

NMFS 2

The DEIS identified 22 red culverts in the project area. Five of these are on Class I anadromous fish streams and 17 are on Class II streams with resident fish. A red crossing is one that cannot pass juvenile fish at some or all flows and does not meet Forest Standards for passing fish in Class I or II streams. The DEIS indicates that red pipes will be removed upon completion of the project to improve fish passage. Given the potential length of time to completion of a timber sale this will delay adequate fish passage for many years.

Soil stability is a concern for the integrity of freshwater EFH. Soils are classified by a Mass Movement Index (MMI) that ranges from 1 (most stable) to 4 (least stable). According to the DEIS nearly all naturally occurring landslides are found in MMI 4 soils. On Suez Island, the number of landslides identified is 383 with 70 initiated in MMI 4, 232 in MMI 3, 40 in MMI 2 and 40 in MMI 1 soils. Twenty harvest related landslides and 12 road related landslides are identified from past harvest activity which have affected 162 streams. Two of the management related landslides traveled greater than 1,500 feet and emptied directly into Dolores Creek, a class I anadromous fish stream. Clearly, a high number of landslides (232 of 383) on Suez Island have been initiated on areas classified as MMI3 soils. A possible explanation for this may be due to MMI 4 inclusions in MMI 3 soils. The DEIS indicates that "actual harvest on MMI 4 soils may be slightly higher on the ground due to inclusions of MMI 4 soils mapped within MMI 1 through MMI 3 soils types" (see page 3-131). In addition to soil type, harvest on slopes with gradient greater than 72 percent is a concern for soil stability. Approximately 640 acres of landslide prone slopes were removed from harvest consideration for this project because "the removal of these landslide prone slopes from the unit pool is the most effective mitigation the soil scientist can apply to protect resources" (see page 3-135). Nevertheless, the DEIS goes on to state that "some harvest units with slopes greater than 72 percent remain because they rate

NMFS 3

## B Response to Comments

below MMI 4 landslide potential” and because they are “considered suitable for harvest with appropriate harvest prescriptions and mitigations” (see Table 3SL-5).

NMFS 4 | Marine EFH may be affected by disturbance of the beach fringe and impacts associated with operation of log transfer and rafting activities and use of a floating camp. A recent study in British Columbia (Romanuk and Levings, 2006), suggests that relationships may exist between some nearshore fish species and supralittoral vegetation by comparing effects of secondary growth to old growth. Species showing various effects included juvenile chum and coho salmon, which were strongly associated with supralittoral vegetation characteristics of mature coastal forests such as mosses and western red cedar. A 1,000 foot beach and estuary fringe is classified as unsuitable for timber harvest and new roads, however, changes proposed to old growth reserves in the project area would reconfigure their shapes from linear to more circular. In doing so, several old growth reserves would be extended further inland at the expense of coastal areas (in VCU 6330 and 6350). The boundaries of the affected old growth areas vary from less than to greater than 1000 feet.

NMFS 5 | Operation of the log transfer facility (LTF) in Port Refugio will have the potential to introduce bark to the marine environment. The LTF will be reconstructed to accommodate barge transfer, but barging will not be required as a part of the contract. The last dive survey of the LTF was conducted in 2001 and reported “no areas of continuous bark coverage” with discontinuous bark on 7,426 square feet (17 acres) of the 11,195 square feet surveyed (see page 3-121). Bark depth ranges up to 10 inches were reported. “Clams, crab, eel, crabgrass, halibut, hermit crabs, geoducks, kelp, rock cod, sea cucumbers and sea stars” were reported (see page 3-121). NMFS is concerned that cumulative bark accumulation could occur as a result of use of this LTF. Additional bark accumulation can lead to reduced oxygen and high hydrogen sulfide levels in benthic habitats. In addition, if the “crabgrass” reported was eelgrass (*Zostera marina*), its distribution and functions should be evaluated further. Eelgrass is a valuable marine habitat that provides numerous beneficial functions, including primary productivity, nutrient cycling, protection from shore erosion and nursery areas for juvenile fish. Additionally, the DEIS notes that a floating logging camp is likely to be used by the timber sale purchaser in Port Refugio (see page 3-161). As a foreseeable event, this camp should be evaluated as a potential cumulative impact in addition to the LTF.

NMFS 6 |

NMFS offers the following EFH Conservation Recommendations pursuant to Section 305(b)(4)(A) of the MSFCMA.

- NMFS 7 |
1. Alternative 4 would benefit freshwater EFH by allowing recovery of the Dolores watershed, which according to the DEIS contains valuable anadromous fish streams, but is not the preferred alternative because of the unfavorable economics associated with proposed helicopter logging in some units. NMFS recommends Alternative 4 as the preferred alternative. Its costs may be reduced by dropping those units proposed for helicopter logging, thus retaining only economically feasible units for the timber sale.
- NMFS 8 |
2. Provide fish passage at the 22 red culverts that do not meet the current standards concurrent with timber sale use of those roads, as opposed to waiting to correct



NMFS 9

deficiencies until the sale is complete. All culverts should again be re-assessed and adequate fish passage provided for all project road crossings at the completion of the timber sale.

NMFS 10

3. NMFS is concerned that the soil stability classification is inaccurate, based on the number of landslides reported on MMI 1-3 soils, and the inexact nature of the classification system, particularly in its ability to identify inclusions of other soil types that may alter the probability of landslides. Given the inexactness of this process, NMFS recommends that all harvest on slopes with a gradient over 72% be dropped regardless of their MMI rating.

NMFS 11

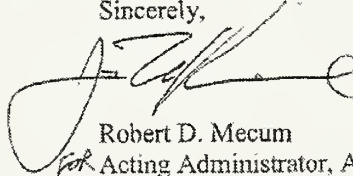
4. Recent science (Romanuk and Levings, 2006) suggests a relationship between old growth supralittoral vegetation and marine fish, including juvenile salmon. This science is not developed to the point of defining a quantitative relationship that would verify the adequacy of a 1000 foot beach and estuary fringe. The USFS Forest Plan (Appendix K) guidelines for the design of small old growth reserves recommend circular rather than linear shapes to maximize the amount of interior forest habitats. In Figures 2-2 to 2-5, a comparison of the TLMP old growth reserves with the proposed old growth reserves shows that implementing this guideline logic to re-define old growth reserve boundaries reduces the amount of old growth bordering the beach fringe. Given the potential importance of old growth to marine fish, this guideline may favor terrestrial species at the expense of coastal resources. NMFS recommends that portions of TLMP old growth reserves distributed parallel to the coast be maintained rather than eliminated to create circular shapes.

NMFS 12

5. As a recognized "recent timber industry practice" (see page 3-122), barging of logs should be a required condition of the timber sale contract. If barging is not used to transfer logs in Port Refuge, EFH consultation should be re-initiated to determine the extent of impact by outlining the log transfer, rafting and storage areas in relation to the known extent of past bark deposition, sensitive resources in the area (including the potential for eelgrass), proximity to the float camp, and consistency with the 1985 "Log Transfer Facility Siting, Construction, Operation and Monitoring/Reporting Guidelines."

If you have questions regarding our comments contact Linda Shaw at (907) 586-7585.

Sincerely,



Robert D. Mecum

for Acting Administrator, Alaska Region

cc: \*comments-alaska-tongass-thorne-bay@fs.fed.us  
\*Chris Meade, EPA Juneau



## B Response to Comments

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\*Tom Schumacher, ADF&G, Juneau  
\*Richard Enriquez and Bill Hanson, USFWS, Juneau  
\*Kevin Hanley, ADEC, Juneau  
\*Mark Minnillo, ADNR-OHMP, Craig  
\*Erin Allee, ADNR, Juneau  
\*Don Martin, USFS, Juneau  
\*Linda Shaw and Katharine Miller, NMFS, Juneau  
\*Steve Kokkinakis, NOAA, Silver Spring

\*email

### Literature Cited

Prussian, K. 2005. Suemez Island Watershed Assessment. Unpublished resource report.

Romanuk, T.N., and C.D. Levings. 2006. Relationships between fish and supralittoral vegetation in nearshore marine habitats. *Aquatic Conserv: Marine Freshw. Ecosyst.* 16: 115-232

## B Response to Comments

### Responses to NMFS – National Marine Fisheries Service, for Robert D. Mecum

**NMFS 1** –The unit was harvested prior to the 1997 Forest Plan and there was not a RAW buffer required or applied. Currently, RAW buffers would be applied to sites that have moderate or high windthrow risk.

**NMFS 2** – Please see response to NMFS 8.

**NMFS 3** – Please see response to NMFS 10 and SCS 56.

**NMFS 4** – Please see response to NMFS 11.

**NMFS 5** – Currently, most of the timber purchasers choose to barge logs; however, the Suemez LTF is permitted under the EPA general permit AK-G70-0055 to raft or barge logs. However, sometimes it is more cost effective to raft logs and the Forest Service will retain the flexibility to raft logs as needed. Under the permit, the bark accumulation would be monitored and if the accumulation were to exceed EPA standards, additional steps would be taken. There is no record of eelgrass (*Zostera marina*) in the most recent Suemez LTF Dive Survey conducted by Alaska Commercial Divers, Inc. in 2001 and no use of the LTF for rafting logs has occurred since then. The complete dive survey is located in the project record.

**NMFS 6** – The floating logging camp has been evaluated as a potential cumulative impact in the Transportation section of the Final EIS. Any floating logging camp must obtain permits for the structure from Army Corps of Engineers and the Alaska Department of Environmental Conservation. The potential effects would be minimized by meeting the requirements of the permits.

**NMFS 7** - Your preference for Alternative 4 is noted and will be considered along with all other factors by the responsible official. Draft EIS Alternative 4 has been modified to exclude proposed helicopter Units 634-044, 634-045, 634-046, 634-047, and part of 634-005. Alternative 4's economics are improved by the exclusion of these helicopter units.

**NMFS 8** – Many of the problems on the existing road system are being addressed. A contract to store about 6 miles of road and remove about 70 culverts on Suemez Island has recently been awarded with the work scheduled to be completed in 2007. This includes the removal of 11 fish passage barriers.

The remaining 11 culverts meet the standards for timber-sale-contract-use because they provide for access to the timber sale and meet the design criteria (see Road Cards) even though they may not meet the current standards for fish passage. If a culvert were to structurally fail prior to or during the sale activities, the new installation would conform to the current standards.

**NMFS 9** – All remaining fish-passage-barrier culverts will be removed after completion of the timber sale contract. Further discussion is provided under the response to NMFS 8.

**NMFS 10** – Mass wasting is controlled by several factors: slope gradient, overburden depth, structural rock properties, water content and soil-pore-water-pressure, and engineering properties of the material. Landslides may initiate within areas mapped as MMI 3 soils. As noted in the Draft EIS, these areas may be inclusions of MMI 4 soils. The soil inventory data in the Tongass GIS database is based on 1:15,840 color aerial photos with “ground truthing” (soil pits) located within each soil polygon depending somewhat on the complexity of the landscape.



On the Scratching Project Area, the soil scientist used the soil inventory data for project area-wide analysis (e.g., determining acres of wetlands within the project area or making a coarse scale analysis of slope stability). Then, all proposed harvest units and road locations with steep slopes were field reviewed by a trained soil scientist to identify unstable slopes. The analysis of slope stability included an assessment of potential impacts of accelerated erosion on downslope and downstream fish habitat, other beneficial uses of water, and other resources. The individual harvest-unit-reconnaissance-reports are included in the Soil and Wetland Resources Report in the project record.

**NMFS 11** –The Interagency OGRs were designed by the USFWS, ADFG, and USFS biologists with terrestrial species in mind. One of the criteria from Appendix K of Forest Plan is to achieve a small OGRs that is more circular rather than linear. The modifications to OGRs proposed for all action alternatives follow Forest Plan design criteria for small OGRs. However, much of the old-growth forest that was in the original Forest Plan OGRs is within the 1000-foot beach and estuary buffer and will not be harvested. Also, all locations of the OGRs are along the shoreline and will provide wider than 1000-foot buffers at different locations. See Maps in Chapter 2 and Chapter 3 for location of the OGRs and the old-growth forest.

**NMFS 12** – See NFMS 5.

## B Response to Comments

# STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES  
OFFICE OF PROJECT MANAGEMENT/PERMITTING  
ALASKA COASTAL MANAGEMENT PROGRAM

FRANK H. MURKOWSKI, GOVERNOR

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September 7, 2006

Mr. Dennis Sylvia  
US Forest Service – Thorne Bay Ranger District  
P.O. Box 19001  
Thorne Bay, Alaska 99919

Dear Mr. Sylvia:

**Subject:       Scratchings Timber Sale Area Draft EIS**  
**State I.D. No. AK 0608-01J**  
**Final Consistency Response – Concurrence**

The Office of Project Management and Permitting (OPMP) has completed coordinating the State's review of the "Scratchings Timber Sale Area Draft Environmental Impact Statement" distributed by the USDA Forest Service for consistency with the Alaska Coastal Management Program (ACMP). The proposed project area is located on Suemez Island in Southeastern Alaska.

Based upon review by the Alaska Departments of Environmental Conservation and Natural Resources, OPMP has developed the enclosed consistency response, in which the State concurs with certification that was submitted by the U.S. Forest Service, that the project is consistent with the ACMP and affected coastal district's enforceable policies, to the maximum extent practicable.

By copy of this letter, I am informing the U.S. Army Corps of Engineers and State review participants of OPMP's proposed finding. If you have any questions, please contact me at 907-465-8790 or email [erin\\_allee@dnr.state.ak.us](mailto:erin_allee@dnr.state.ak.us).

Sincerely,

  
Erin Allee  
ACMP Project Specialist

Enclosure

*"Develop, Enhance, and Conserve Natural Resources for Present and Future Alaskans."*

### Distribution List

Kevin Hanley - ADEC, Juneau  
Mark Fink - ADFG, Anchorage  
Alex Dugaqua - ADNR/DMLW, Juneau  
Jim Anderson - ADNR/DMLW, Juneau  
Mike Curran - ADNR/Regional Forester, Ketchikan  
Jim Cariello - ADNR/OHMP, Petersburg  
Joe Donohue - ADNR/OPMP, Juneau  
Margie Goatley - ADNR/SHPO, Anchorage  
Brian Templin - Coastal District, Craig  
Steven Diltz - Coastal District, Hydaburg  
Mike Harper - Coastal District, Thorne Bay  
Terri Stinnett-Herczeg, USACE, Anchorage  
Dennis Sylvia - Planning Team Leader, Tongass National Forest, Thorne Bay  
Forrest Cole - District Ranger, Tongass National Forest, Ketchikan  
Larry Edwards - Greenpeace, Sitka  
Tom Waldo - Earthjustice, Juneau  
John Peckham - Southeast Alaska Seiners Association, Ketchikan  
Mark Vinsel - United Fisherman of Alaska, Juneau  
Tom Gemmell - Marine Conservation Alliance, Juneau  
Mike Round - SSRAA Inc., Ketchikan  
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Cindy Hartmann - NMFS, Juneau  
Buck Lindekugel - SEACC, Juneau  
Michele Metz - Sealaska Corporation, Juneau



## B Response to Comments

### ALASKA COASTAL MANAGEMENT PROGRAM FINAL CONSISTENCY RESPONSE CONCURRENCE

DATE ISSUED: September 7, 2006

PROJECT TITLE: Scratchings Timber Sale Area DEIS

STATE ID. NO.: AK 0608-01J

AFFECTED COASTAL RESOURCE DISTRICT: Craig/Hydaburg

APPLICANT: U.S. Forest Service / Mr. Dennis Sylvia

#### DESCRIPTION OF PROJECT SUBJECT TO REVIEW:

The following is taken directly from the Summary section of the DEIS sent to OPMP by the U.S. Forest Service (USFS):

##### \*Project Area

The Scratchings Timber Sale project area is located on Suemez Island in Southeastern Alaska. Suemez Island is located west of Prince of Wales Island and southwest of Craig, Alaska. The project area is approximately 37,127 acres in size.

##### Proposed Action

The Proposed Action for the Scratchings Timber Sale project area (Alternative 2) includes timber harvest and the development of a road management plan. The proposed timber harvest would result in the production of approximately 42 million board (MMBF) of timber from approximately 1,932 acres. Tongass Land and Resource Management Plan (Forest Plan) Standards and Guidelines would be applied in areas with marten and goshawk habitat. Logs would be transported to the Port Refugio Log Transfer Facility for shipping by barge or raft to local mills. The project would require approximately 19 miles of new road construction and up to 20 miles of road maintenance.

##### Decisions to be Made

The Forest Supervisor will decide whether and how to implement activities within the Scratchings project based on the environmental analysis in this DEIS. The decision will be made in accordance with Forest Plan goals, objectives, and desired conditions. The decision may include:

- The location, amount, and method of timber harvest, temporary road construction, and silvicultural practices
- Road management objectives
- Necessary project-specific mitigation measures and monitoring requirements
- Significant restrictions on subsistence uses
- Whether or not to modify the boundaries of one or more small old-growth LUD boundaries with a non-significant Forest Plan amendment.

## Purpose and Need

The Scratchings Timber Sale project is proposed at this time to respond to the goals and objectives of the Tongass Land and Resource Management Plan (forest Plan). The project is proposed to help move the project area toward desired conditions described in the Forest Plan. Applicable forest-wide goals and objectives found in the Forest Plan (pages 2-3 and 2-4) include:

- "Manage the timber resource for production of saw timber and for timber harvest, on an even-flow, long-term sustained yield basis and in an economically efficient manner."
- "Seek to provide a timber supply sufficient to meet annual market demand for Tongass National Forest timber, and the market demand for the planning cycle."
- "Provide a diversity of opportunities for resource uses that contribute to the local and regional economies of Southeast Alaska."

## SCOPE OF PROJECT TO BE REVIEWED:

The scope of these concurrent NEPA scoping and preliminary ACMP consistency comment reviews includes all information, possible alternatives and their descriptions, and procedural decisions that are discussed within the "Scratchings Timber Sale Area Draft Environmental Impact Statement".

## CONSISTENCY STATEMENT:

OPMP 1

Based on an evaluation of this project by the Alaska Department of Natural Resources' Division of Mining, Land and Water and Office of Habitat Management, the Alaska Department of Environmental Conservation, and the Coastal Districts, the State of Alaska concurs with the consistency certification submitted by the USFS, and signed by Mr. Forrest Cole. This consistency response contains the comments and recommendations of the State agencies participating in this concurrent NEPA scoping and preliminary ACMP consistency review.

## ADVISORIES:

Department of Environmental Conservation (ADEC) – On August 29, 2006 OPMP received the following NEPA, CWA Section 319, and preliminary ACMP consistency comments:

"1. Proposed Harvesting and Road Construction in the Dolores Watershed and the Selection of a Final Alternative for the Record of Decision

As described in the DEIS, the Dolores Watershed, and the anadromous fish habitat that it contains, has been substantially degraded by past cumulative timber harvesting and road construction, and associated management induced landslides and road failures. According to the DEIS (page 3-100), "Proper Function Condition Assessments of all three tributaries and the mainstem creek in Dolores Watershed show loss of fish habitat. Assessments indicated a lack of large woody debris; increased sedimentation along all sections; accelerated erosion due to landslides; and a lack of channel complexity. Failed (windblown) stream buffers have reduced the future availability of large woody debris; reduced bank stability; and resulted in increased sedimentation in the stream. The extent of these effects and the condition of the upslope areas noted in field reconnaissance suggest the channel will further degrade prior to improving. This downward trend is a concern for existing and future fish habitat along a portion of the mainstem of Port Dolores Watershed." These findings present a compelling

OPMP 2

## B Response to Comments

OPMP2  
conf. argument for avoiding further harvest entries in this watershed, altogether, yet the action alternatives propose up to 420 acres of additional harvesting and up to five miles of new road construction.

OPMP3 The DEIS (page 3-12) states that *"Project specialists expressed concerns about cumulative impacts in the Dolores Watershed due to the number of landslides that have occurred in the area naturally and from past harvest and road building activities."* Because of these concerns, the interdisciplinary team developed Alternative 4 to allow for harvesting in the watershed while avoiding further cumulative impacts to Dolores Creek and its tributaries. This alternative would require only 0.65 mile of road construction located high in the watershed, and would involve the use of helicopter yarding to complete the harvest of the bulk of the units. In addition, it would require no new road crossings of Class I and II fish-bearing streams. Consequently, we strongly recommend that Alternative 4 be selected as the final alternative for the record of Decision for this project as, according to the DEIS (page 3-113), it "... *presents the least risk to fish habitat*" and *"would limit harvest and road construction in Dolores Watershed in an effort to maximize the protection and promote the recovery of sensitive fish habitat."* Conversely, we do not support the selection of

OPMP4 Alternatives 2, 3, or 5 due to their high potential for contributing to and exacerbating existing cumulative impacts in this watershed.

### 2. Road Storage and Decommissioning

OPMP5 For each action alternative, the DEIS (pages 3-162 and 3-163, and elsewhere) states *"About 11 miles of existing NFS road would be placed in storage or decommissioned."* However, according to the Prince of Wales Island Access and Travel Management Plan (cited in the DEIS), and to DEIS Table 3 TR-2 (page 3-159), 18 miles of existing NFS roads would be placed in storage or decommissioned under all of the action alternatives. Consequently, it is somewhat confusing as to what the actual disposition of these roads will be. This should be better clarified in the FEIS.

### 3. Port Refugio Log Transfer Facility (LTF)

The DEIS (page 3-160) indicates that the Port Refugio LTF will be reconstructed as a barge facility "... *with a 14 percent ramp terminating at a steep rock face*" to provide for loading logs directly onto a barge. However, it also indicates that the LTF could be used as a float-off facility, whereby log bundles are placed on the intertidal area at low tide and allowed to float-off at high tide for raft make-up.

OPMP6 According to the DEIS (page 3-121), a June 27, 2001 dive survey found no areas of continuous bark coverage on the benthic substrate, though discontinuous bark coverage was documented across 17 acres, or 66 percent, of the area surveyed. Within this area, bark thicknesses of up to 10 inches were noted. While this amount and distribution of bark complies with the Zone of Deposit requirement of the LTF permit, we highly recommend that barging be used in lieu of conventional inwater log transfer and storage to avoid the deposition of additional bark on the benthic habitat at the LTF site.



ACMP COMMENTS

OPMP 7 Pursuant to 11 AAC 110.015 of the Alaska Coastal Management Program and 11 AAC 95 (the Forest Practices Regulations), the department concurs with the Forest Service's consistency determination for this project. Our concurrence applies only to the water quality and fisheries aspects of this sale. We are able to agree with this determination based, in large part, on the level of information that was provided concerning the proposed road maintenance and closure methods. In addition, the full implementation of the TLMP process group standards and guidelines (RIP2.III.E) along all Class I, II, and III streams within the project area provides reasonable assurance that yarding will be carried out consistent with the standards of 11 AAC 95.360(a). As indicated above, we strongly recommend that the Forest Service select Alternative 4 for the Record of Decision for this project, as it best ensures the maintenance of water quality and fish habitat, and has the least potential for further cumulative impacts in the Dolores Watershed."

Department of Natural Resources:

Office of History and Archaeology – On August 4, 2006 OPMP received the following comments and recommendations:

OPMP 8 "Our office has previously reviewed this project and have provided the following stipulations:

- o No timber harvest units or road construction activities should occur within 1000' of the coastline
- o Any timber harvesting or road construction activities will be monitored by an archeologist

Rational: According to the archaeological report by Julie Raymond-Yakoubian and Terrence Fifield (2006) entitled, *Scratchings EIS Suemez Island Heritage Resources Assessment*, the project area is considered to be of high potential for an obsidian quarry site."

This consistency response may include reference to specific laws and regulations, but this in no way precludes an applicant's responsibility to comply with all other applicable State and federal laws and regulations.

OPMP 9 This consistency response is only for the project as described. If, after issuance of a final consistency response, the applicant proposes any changes to the approved project, including its intended use, prior to or during its siting, construction, or operation, the applicant must contact this office immediately to determine if further review and approval of the modifications to the project is necessary. Changes may require amendments to the State authorizations listed in this response, or may require additional authorizations.

OPMP 10 If the proposed activities reveal cultural or paleontological resources, the applicant is to stop any work that would disturb such resources and immediately contact the State Historic

## B Response to Comments

OPMP 10 | Preservation Office (907-269-8720) and the U.S. Army Corps of Engineers (907-753-2712) so  
cont. | that consultation per section 106 of the National Historic Preservation Act may proceed.

**FINAL CONSISTENCY RESPONSE PREPARED BY:**

Erin Allee – ACMP Project Specialist  
Department of Natural Resources  
Alaska Coastal Management Program  
PO Box 111030  
Juneau, Alaska 99811-1030  
(907) 465-8790



Erin Allee

### **Responses to OPMP – Alaska Department of Natural Resources, Office of Project Management and Permitting, Erin Allee**

**OPMP 1** - The Forest Service acknowledges this concurrence; please see Chapter 1 of this Final EIS, State and Federal Agency Review.

**OPMP 2** – Please see response to EPA 2.

**OPMP 3** –Your preference for Alternative 4 is noted.

**OPMP 4** - The responsible official will consider all factors including the cumulative effects to the Dolores watershed by when making the decision on the project.

**OPMP 5** - There are about 28 miles of National Forest System (NFS) road on Suemez Island. A contract has been awarded that will store about 6 miles of road including the removal of about 70 culverts; this includes the removal of 11 culverts currently considered to be fish passage barriers. About 11 additional miles of road are proposed for storage with the Suemez Access and Travel Management Plan. This will bring the total miles of stored or decommissioned road to about 18 miles with 10 miles of open road remaining. Total miles of road may not sum due to rounding.

**OPMP 6** - The Forest Service will follow all of the requirements stipulated in the permits, which regulate the use of the Port Refugio LTF.

**OPMP 7** - Please see responses to EPA 2 and OPMP 3 and 4.

**OPMP 8** - The cited statements are contained in the Heritage Specialist Report: analysis of effects. They were reiterated in the SHPO's concurrence letter to the Forest Service as per Section 106 of the National Historic Preservation Act. There is no timber harvest or road construction within the 1000-foot beach buffer to meet Forest Plan direction. Monitoring will occur during project implementation.

**OPMP 9** - A Project Clarification, as discussed in the MOU, will be provided to the State if needed.

**OPMP 10** - This comment reflects a standard clause in NEPA documents and federal contracts. If previously unknown cultural materials are discovered during the project, activities in the vicinity will cease and the operator will protect the discovery and notify the Forest Service (District Ranger). The Forest Service in consultation with the Alaska State Historic Preservation Officer will develop a mitigation strategy. Operation will not resume until that strategy has been successfully implemented (see page 2-8 of the Draft EIS). The statement about paleontological resources reflects state law. Under federal regulations discovery of invertebrate paleontological discoveries not of museum quality would not be cause to cease work. Discovery of vertebrate fossils would be.



## B Response to Comments

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Bk1492@aol.com

08/13/2006 10:24 AM

To: comments-alaska-tongass-thorne-bay@fs.fed.us

cc:

Subject: public comment on scratchings deis vol I and 2 r10 mb 514a

attention forrest cole

SACHAU /

i oppose logging of 42 million board feet and destroying this area owned by national taxpayers, who have paid taxes for years and years to preserve and protect this area and its wildlife and birds. your logging for greed and profiteering plan is disgusting and an insult and rape of national taxpayers, who are being ripped off for timber barons profiteering. i guess they donate more to political campaigns so the taxpayers get ripped off.

there is no "need" to do this at all except profiteering and greed and because you can rip off american citizens who own this land.

we need all the intact trees we can get in this world. we must protect the full tongass from the profiteers who will kill their mother for money if given the chance. they certainly kill us all with their policies of logging without mercy. wildlife will die. streams will die. the world will be lesser if this plan goes through.

it is ill thought out. it is simply capitulation to baser instincts--the worst instincts of man. this is a terribly rapacious plan. so much is negatively impacted by this logging plan:

wildlife

birds

water

fish

erosion and water quality

temperature - creating heat islands

logging even 6 acres is an enormous loss to the national taxpayers. this plan takes what should be our children's and grandchildren's heritage.

b. sachau

15 elm st

florham park nj 07932

### **Response to SACHAU – B. Sachau**

**SACHAU 1-** The Final EIS describes the potential impacts of the Scratchings Timber Sale. The Forest Supervisor considered these impacts in his decision.

## B Response to Comments

Planning Staff, Thorne Bay/Craig Ranger Dist.  
Attn: Scratchings Timber Sale project  
PO Box 19001  
Thorne Bay, AK 99919

September 18, 2006

Re: Comments on Scratchings Timber Sale DEIS

Sent via 1<sup>st</sup> Class Mail and Email

Dear Planning Staff:

The following comments are submitted on behalf of the Sitka Conservation Society, Greenpeace, The Wilderness Society, Natural Resources Defense Council, and the Sierra Club on the Scratchings Timber Sale Draft Environmental Impact Statement (DEIS).

All of the organizations have a long history of involvement in the planning process on the Tongass National Forest, especially related to proposed plans for logging and road building. The organizations' memberships include hundreds of Alaskans many of whom use the Tongass National Forest and are concerned about management of its natural resources and roadless areas. Our members within the Tongass include commercial fishermen, Alaska Natives, tourism and recreation business owners, and hunters and guides. The organizations also represent thousands of Americans living outside of Alaska all of whom have a stake in the continued sustainability of the Tongass and its wildlands. The groups are committed to preserving the integrity of Southeast Alaska's natural environment and protecting its wildlands from unnecessary development.

We incorporate by reference all documents we have cited, and request that all of them be included in the planning record and be considered in the planning process. Some cited documents that may be difficult to locate have been attached. Please contact us for any other cited documents that you are unable to find.

### **The Scratchings Project Is Based On An Arbitrary And Unlawful Forest Plan**

SCS / Planning on the Scratchings Project is directly reliant upon the 1997 TLMP. However, the 9<sup>th</sup> Circuit Court of Appeals recently invalidated the TLMP in *NRDC v. U.S. Forest Service*. The decision in *NRDC v. U.S. Forest Service* requires the Forest Service to prepare a new forest plan for the Tongass. The Forest Service has begun this planning process. The National Environmental Policy Act specifically prohibits the Forest Service from making decisions that prejudice the ultimate decision on a programmatic EIS. By expending considerable agency resources to complete the NEPA analysis on the Scratchings timber project prior to completing the court-mandated revision of the Tongass Plan, the agency is prejudging the likelihood that the Scratchings project area would be considered for non-timber LUDs status, including wilderness, prior to the completion of that court mandated revision. For this reason we request that no further planning of this project continue until the new Forest Plan is finalized and an appropriate appeal period has expired.



## The Forest Service's Proposal to Log on Suemez Island and the Project's Purpose & Need Are Unjustified in the DEIS

### **The Estimation of Market Demand is Plainly in Error, and the Statement of Purpose and Need is Unsupported.**

565 2 | The Purpose and Need sections of the DEIS, both in Chapter 1 and in Appendix A are inaccurate and insufficient. Appendix A states that the annual demand for Tongass timber is projected to be 143 mmbf for FY 2006 (DEIS pg. A-7). At no time during the last 6 years has the volume sold, much less the volume cut, approached this number. The first three quarters of FY 2006 has seen 65 mmbf sold. Sale offerings that could be bid on during the last quarter will not come close to making up the difference, even in the unlikely event that all of the potential volume offered would actually be bid on and awarded. At no time in the last several years has volume for the small sale program (defined as sales less than 500 mmbf for the purpose of these comments), and the micro sale program combined, been more than 3 mmbf. The two large mills currently buying Tongass timber (Viking Lumber and Pacific Log & Lumber) have shown no capability to even come close to using the remaining 140 mmbf, either in terms of capacity or in terms of having that much market for end products. The two medium mills (Icy Straits and S.E. Wood Products) have volume under contract that, judging by their historical use, is sufficient to last them for several years. Even if this weren't true the infrastructure to carry out the in the woods the logging operations necessary to cut 143 mmbf does not exist. The 143 mmbf number represents a wish on the part of the Forest Service to increase NEPA-cleared volume on the speculation that the Forest Service can, through direct taxpayer subsidies (not revealed in the DEIS), stimulate the formation of new mills on the Tongass. It does not represent actual demand based on the ability of the current industry to economically process and market timber. There is no indication that market conditions will improve in FY 2007. To the contrary, United States new housing starts and housing prices are significantly down throughout most of the country, and markets for Tongass timber may actually decline.

565 3 | The DEIS also rationalizes the need for the Scratchings DEIS as being necessary to feed a pipeline of timber supply during the TLMP revision process. They state that roaded sales will be particularly important during the revision process (DEIS pg. A-4). However the Scratchings project is a roadless area project. Roadless areas containing POG, and that are in the 1997 TLMP timber base, are the particular subject of the 9<sup>th</sup> circuit's NRDC vs. the Forest Service decision. Proceeding with this NEPA process and signing a ROD during the TLMP revision will prejudice the outcome of that process. The DEIS also makes the argument that stopping the NEPA process on this project will be a waste of time and money. This is the very reason that this sale, which is subject to the NRDC plaintiff's injunctive relief request, should be stopped, and indicates that the expenditure of resources on this roadless area sale will indeed prejudice the outcome of the TLMP revision as asserted above.

565 4 | Appendix A is explicitly says that it tiers to 1997 TLMP. The argument made in the appendix is that because the Forest Plan FEIS analyzed environmental effects based on an ASQ of 267 mmbf, and because much less has been cut annually since then, then the current timber program (including the Scratchings project) is environmentally acceptable and represents a balanced allocation of land use designations between user groups (DEIS pg. A-3). There is no mention that

## B Response to Comments

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SCS 4  
cont. | the plan is 10 year out of date, that it was formulated when a pulp industry still existed, and that there was no agreement that the plan adequately protected resources or that it was sustainable. Indeed the science review panel came to the conclusion that the plan's conservation strategy was not adequate. The 9th circuit's decision in NRDC vs. the Forest service found that mistakes in calculating the 267 mmbf ASQ had un-necessarily put environmentally sensitive roadless areas at risk and that relying on 1997 TLMP's ASQ number as a rationalization for timber sales was illegal. Also of note is that the Forest Service also found the 97 land use designations insufficient to protect resources when the 1999 TLMP appeal decision was issued. This decision was not overturned because the decision was found to be faulty, but was remanded to the Forest Service because a SDEIS was deemed necessary. A new Forest Service Administration in D.C. refused to prepare one, hence the public was left with a faulty, inadequate, and illegal forest plan that is not based on sound science. Tiering to its environmental analysis in Appendix A is not appropriate.

SCS 5 | DEIS Chapter 1 (Purpose and Need) also identifies the significant issues and discusses how the Range of Alternatives addresses those issues. What is immediately evident is that the DEIS has chosen Alternatives that only address one issue each. What is needed is an Alternative that addresses together the impacts on the Dolores Creek Watershed, the roadless and un-roadless areas, and timber sale economics. There is no way a reviewer can see what the effects would be, for instance, of taking Alternative 5 (no logging in the inventoried roadless area and the smaller un-roadless area in the N.E. portion of the project area) and combining it with a more economic version of Alternative 4. Alternative 5 is already the most economic of the 5 alternatives. By  
SCS 6 | removing the more un-economic helicopter units of Alternative 4 (which is designed to protect the Dolores Creek Watershed), such an Alternative could address concerns about all the significant issues identified in the DEIS and remain highly economic. The lack of such an alternative needs to be corrected.

### **None of the Justifications Given for the Project Have Merit.**

The Scratchings DEIS provides three kinds of justifications for the project in the Purpose and Need section of the document's Purpose and Need chapter (Chapter 1). These categories of justification are:

(1) *Meeting "area-specific goals, objectives, and desired conditions" identified in the Forest Plan's Land Use Designations.*

One sentence was devoted to this justification, with no specifics provided.

(2) *Meeting a limited set of three forest-wide goals and objectives from Forest Plan pages 2-3 and 2-4.*

The applicable goals and objectives mentioned are summarized here. (a) Manage suitable and available timber lands for economically efficient, even-flow, long-term sustained yield wood production. (b) "Seek to provide a timber supply sufficient to meet" the annual and planning cycle market demands. (c) Contribute to the local and regional Southeast Alaskan economies by providing "a diversity of opportunities for resource uses."

One sentence including three bullet items was devoted to this justification.

(3) *Reference is made to Appendix A of the DEIS regarding the relationship of the project to the Tongass timber sale program and its scheduling at this time.*



SCS 7 Appendix A provides a detailed discussion related to estimating market demand that we believe is plainly in error, and nothing else of substance either.

So except for market demand, the other topics raised in the Purpose and Need section are merely mentioned in the most cursory manner. Accordingly, the section does not convey enough information for the reader to understand the cause for the project or to distinguish between and understand the objectives (purpose) and requirements (needs) that have led to the proposal. Adequate justification for the project has not been provided by the single paragraph in the Purpose and Need section and the market demand discussion in Appendix A.. Note that although 40 CFR 1502.13 calls for "briefly specify(ing) the underlying purpose and need," the history of the regulation must be understood. In FSH 1909.15 you will find the following text of CEQ Supplementary Information.

"Comments on Section 1502.13: Purpose and Need. This section of the draft regulations provided that agencies shall briefly specify -- normally in one page or less -- the underlying purpose and need to which the agency is responding in proposing alternatives for action. Many commenters stated that in some cases this analysis would require more than one page. The Council responded to these comments by deleting the one page limitation."

For these reasons the DEIS should be supplemented with a fuller explanation of the purpose and need for the project, with an opportunity for public to comment again in light of the explanation. Further, we believe the purpose and need requires alteration as explained below and also meriting supplementation of the DEIS.

## Reasons Given For Scheduling The Project At This Time Lack Merit.

SCS 8 Appendix A of the DEIS, "Reasons for Scheduling the Environmental Analysis of the Scratchings Timber Sale," is the only element of the project's purpose and need (see the section above) that is discussed in any detail in the DEIS. Our review of the appendix reveals that the analysis in the appendix is erroneous and that without substantial revision it cannot serve as a basis for scheduling the project. We believe that revising the appendix will result in a significant change in the character of the project and may even dismiss the need for the project or its purpose.

## Current Need For The Scratchings Project In The Tongass Timber Program Has Not Been Proven And May Not Exist.

The approach in Appendix A is that the Scratchings project would contribute to "providing an orderly flow of timber ... on a sustained yield basis to meet timber supply requirements." The project and its proposed timber yield are claimed to be needed to attain the goal of having "under analysis" 4.5 times the projected annual cutting of 132 mmbf of timber, or 594 mmbf under analysis. The appendix notes a shortfall in this goal, in that (one year ago) only 309 mmbf was under analysis, implying this project is need to fill the gap of 285 mmbf. (See DEIS pp. A-12 & A-17)



## B Response to Comments

- SCS 9 | We challenge those figures, but even if the figures were correct the proof of the need for this project has not been made because no accounting has been made for what other projects do or could contribute toward that goal. Show us those numbers, based on a reasonable market demand assessment.

**The Market Demand Estimation Used To Justify The Project Is In Error , And Contrary To NEPA The Model Used To Estimate Market Demand Has Undisclosed Shortcomings.**

Calculation of market demand for Tongass timber is fundamental to the justifications given in Appendix A for pursuing the Scratchings project and for the project's timber yield objective. The calculation was made with a mathematical model. (See planning record document 0252 and others.) It is apparent that the market demand model and the data used to run it have substantial shortcomings, and that the results obtained are unreliable and excessively high.

Performance of the market demand model has never been addressed in the Tongass National Forest's annual monitoring and evaluation reports, nor has the model otherwise been verified against the market demands of recent years. The model that was used has not been adjusted to unfolding real-world market demand for Tongass timber. As a result of the August 2005 9<sup>th</sup> Circuit Court order in *NRDC v. USFS*, however, the Forest Service has produced Brackley et al. July 2006 (PNW-GTR-677), which is a revised model for market demand. This model illustrates a dramatically lower projected timber cut for the Tongass, at a level of 34 mmbf (average derived demand, not including log exports, for 2008 through 2012) for the current industry or 48 mmbf for an expanded industry. These figures are in line with the volume that has actually been cut on the Tongass in recent years, while the 132 mmbf "projected harvest" figure used in the DEIS (see footnote to Table A-2 and [http://www.fs.fed.us/r10/ro/policy-reports/for\\_mgmt/annual\\_demand\\_fy2006.pdf](http://www.fs.fed.us/r10/ro/policy-reports/for_mgmt/annual_demand_fy2006.pdf)) is not. The agency's projected harvest figures have consistently overestimated the eventual actual rate of logging, and the value of the projected harvest figure for the years in question here has not been updated since 2000. See Lerum (2005), citing page 9 of Morse (April 2000).

- SCS 10 | NEPA "requires up-front disclosures of relevant shortcomings in the data or models." (*Lands Council v. Powell* 379 F.3d 738, 9<sup>th</sup> Cir. 2004) The Scratchings DEIS has violated NEPA by not making those disclosures for the market demand model that was used.

- SCS 11 | Furthermore, the DEIS has not met the standards of analysis required by NEPA because it has relied on the model's faulty results. The purpose and need for the project needs to be reevaluated on the basis of a rational market demand estimate, and the project's range of alternatives and the analysis of environmental effects need to be revised accordingly. This necessitates a Supplemental DEIS.

Finally, we point out that this is not only Forest-level issue. It is also a project-level issue because of the Forest Service's obligation under NEPA to, at all planning levels, provide full and fair discussion of significant issues and disclosure of all relevant facts (including but also beyond the shortcomings of data and models).

## The DEIS Does Not Disclose The Public Investment Cost Of The Project.

SCS 12 | There is no discussion of public investment costs in the DEIS or the relationship of public investment to the economic viability of the Tongass timber program. The DEIS should include not only an accounting of the average site specific project costs for timber sales but also the Tongass-wide timber program costs and more direct subsidies such as those associated with road construction, maintenance, reconstruction, and LTF construction. In recent years the Forest Service has expended millions of dollars in road subsidies in an attempt to shore up uncompetitive mills and logging companies. Nearly every large sale award over the last 5 years has these expenditures associated with them. Examples include:

• Midway Rcoffer II	\$2,695,547
• Luck Lac II	\$244,566
• Lindenberg	\$391,381
• Kogish/Shinaku	\$875,292
• Skipping Cow	\$1,138,000
• Upper Carroll II	\$1,555,000
• Buckdance-Madder	\$2,877,000

Other examples of road construction and maintenance projects designed to promote specific sales are Kuiu, Traitors Cove (Francis Cove roads project), Overlook, Shelter Cove, Salty, Logjam roads project (under Control lake EIS), Baht (Zarembo roads project), Blind Cove, and there are others.

Having a full accounting of the costs needed to make a timber sale acceptable to bidders relates directly to whether Tongass timber is competitive on world markets. Whether Tongass Timber is indeed competitive in world markets is in turn particularly important for estimating market demand. Subsidies are dependent on continued funding. The future for these extraordinary expenditures is very uncertain for a number of reasons, not the least of them political. Without them, the cost of Tongass timber products and exports would be higher. This in turn would reduce market demand below what can now be factually demonstrated to exist for Federal timber, the 46 mmbf cut on average, per year, over the last 5 fiscal years.

## SCS 13 | The DEIS Lacks A Thorough Financial Efficiency Analysis

Other costs associated with the Tongass Timber Program and the lack of a complete financial efficiency analysis have been commented on before for other timber projects. The following is from the Three Mile Timber Sale comments submitted by The Sitka Conservation Society, NRDC, and the Sierra Club: "The FEIS Does Not Perform a Financial Efficiency Analysis and, Accordingly, Does Not Disclose Public Costs and Misleads the Public and Decision-makers By Creating the Appearance that the Forest Service Will Make Money By Offering Timber."



## B Response to Comments

### **The FEIS Violates Forest Service Direction And NEPA Because It Does Not Contain A Complete Financial Efficiency Analysis**

Other costs associated with the Tongass Timber Program and the lack of a complete financial efficiency analysis have been commented on before for other timber projects. The following text in indented blocks is from the Three Mile Timber Sale comments submitted by The Sitka Conservation Society, NRDC, and the Sierra Club:

*"The FEIS Does Not Perform a Financial Efficiency Analysis and, Accordingly, Does Not Disclose Public Costs and Misleads the Public and Decisionmaker By Creating the Appearance that the Forest Service Will Make Money By Offering Timber*

*The Forest Service Spends Large Sums of Public Money Each Year And Receives Little Revenue In Return*

Unlike many other National Forests the Tongass National Forest's timber sale program has been hemorrhaging taxpayer dollars for decades. Estimates of the Region 10 timber program losses range from staggering to even more staggering. A conservative calculation of the average loss per thousand board feet (mbf) over an eleven-year span, 1992-2002, works out to \$157.00/mbf (*see exhibit...*). Other calculations that include legislative earmarks for pre-roading and other special appropriations show an even higher level of taxpayer subsidy. *See SEACC, Taxpayer Losses and Missed Opportunities: How Tongass Rainforest Logging Costs Taxpayers Millions (Fall 2003).*

Also from the Three Mile comments:

***The FEIS Violates Forest Service Direction and NEPA Because It Does Not Contain A Complete Financial Efficiency Analysis***

In planning a timber sale project, the Forest Service is required to compare the public money it will spend administering the project with the prospective returns to the agency. That analysis, which "compares estimated Forest Service expenditures with estimated financial revenues", allows the decisionmaker and the public to gain some understanding of "the future financial position of the program if the project is implemented." Forest Service Handbook § 2409.18\_30.

This comparison of public costs and returns, called a Financial Efficiency Analysis, is required by the Forest Service Handbook and by NEPA. *See* Forest Service Handbook §§ 2409.18\_20 at 5-6, 2409.18\_10 at 10, 2409.18\_30 at 7; 40 C.F.R. § 1508.8(b) ("Effects includes ecological . . . aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative."); *Hughes River Watershed Conservancy v. Glickman*, 81 F.3d 437, 446 (4th Cir. 1996) ("NEPA requires agencies to balance a project's economic benefits against its adverse environmental effects.").

Indeed, the FEIS states explicitly, "Financial efficiency analysis, which is required for every timber sale project . . . compares the estimated Forest Service direct expenditures with the estimated financial revenues of proposed timber sales." FEIS at C-39 (citing to Chapter 3, Issue 2). The FEIS purports to conduct such an analysis in Chapter 3 of the FEIS. *See* FEIS at 3-22 (stating that the Financial Efficiency Analysis undertakes "a comparison of those costs and benefits that can be quantified in terms of



actual dollars spent or received within the project area"). That analysis, however, does not contain any discussion or estimation of the public costs incurred by the Forest Service in administering the Three Mile project. *See id.* at C-22 to 33. Accordingly, the FEIS does not comply with the Forest Service Handbook or its own description of the Financial Efficiency Analysis. *See id.* at C-39.

This failure is particularly egregious given the central role played by economics in the decision making process for the Three Mile project area. Economics is identified in the ROD as one of three "significant issues" for analysis. *See* ROD at R-7 to 9. Moreover, the benefits associated with logging in the Three Mile area are almost entirely financial. *See* ROD at 2 (explaining the purpose and need for logging in terms of timber production, market demand, local and regional economies, and employment); ROD at 5-6 (providing reasons for decision in which all benefits of proposed action are from logging); FEIS at 3-28 to 29 (describing employment and income benefits). Thus, economic benefit from logging – whether to timber companies, mills, local economies, or the Forest Service -- provides the basic reason for offering timber in this area.

With that context, the failure to disclose public costs violates NEPA because it creates the impression that the Forest Service will make money by offering timber. Indeed, the ROD states explicitly that "[t]he Selected Alternative provides positive economic returns while meeting other resource objectives." ROD at R-6. That statement is belied by the planning record. In fact, it appears that the Forest Service conducted a sort of Financial Efficiency Analysis and then chose simply not to include it in the FEIS. *See* AR Doc. 343 at 6-10. In that analysis, the Forest Service estimated the costs it would incur and then subtracted them from the revenue it expected based on the projected bid levels. That analysis reveals that the Forest Service projects that it will lose \$754,823 by selecting Alternative 6. *See* AR Doc. 343 at 10. The failure to disclose that fact in the FEIS violates NEPA.

To remedy this deficiency, the Forest Service must supplement the Three Mile FEIS with an accurate estimate of the costs that will be incurred by the public. That cost must then be factored into a Financial Efficiency Analysis to allow the public and decisionmaker to understand fully the financial ramifications of approving logging in the Three Mile area."

The complaint from the litigation filed over the Three Mile Timber Sale's Public Investment Analysis states:

**"Timber Sale Losses**

87. Each year, the Forest Service spends tens of millions of dollars administering the Tongass timber sale program.

88. The Forest Service keeps detailed records of the money it shows as spent each year on the timber sale program. Some of that information is made available to the public as part of the annual monitoring reports.

89. The Forest Service reported that in FY 1999 it spent \$19,842,546 on "timber management," \$7,685,131 on "timber road construction," more than \$5 million on

## B Response to Comments

“general administration,” and more than \$3 million on “ecosystem planning, inventorying, and monitoring.”

90. The Forest Service reported that in FY 2000 it spent \$14,524,473 on “timber management,” more than \$3 million each on “road construction” and “road maintenance, nearly \$4 million on “general administration,” and more than \$1 million on “ecosystem planning, inventorying, and monitoring.”

91. The Forest Service reported that in FY 2001 it spent \$21,192,221 on “timber management,” more than \$13 million on “roads” and more than \$2 million on “ecosystem planning, inventorying, and monitoring.”

92. The Forest Service reported that in FY 2002 it spent \$17,923,470 on “timber management,” more than \$15 million on “roads” and more than \$3 million on “ecosystem planning, inventorying, and monitoring.”

93. In FY 1999, the value of timber sold from the Tongass totaled approximately \$5,456,000. In FY 2000, the value of timber sold from the Tongass totaled approximately \$5,582,000. That number declined to approximately \$1,855,000 in FY 2001 and approximately \$1,242,000 in FY 2002. In FY 2003, the value of timber sold from the Tongass totaled approximately \$1,464,000, and in FY 2004, it totaled approximately \$1,186,000.

94. These costs, and the associated losses, were not discussed during the NEPA process for the Threemile timber sale.

95. The Threemile FEIS states that a “Financial efficiency analysis, which is required for every timber sale project . . . compares the estimated Forest Service direct expenditures with the estimated financial revenues of proposed timber sales.” The FEIS, however, does not present any discussion of Forest Service direct expenditures in preparing the Threemile timber sale.

96. As one reason for allowing logging, the Threemile ROD states that “[t]he Selected Alternative provides positive economic returns.” That statement is misleading. In fact, the Forest Service estimates that it will lose \$754,823 by selecting Alternative 6.

97. A document included in the Planning Record, but not referenced or included in the FEIS, calculates the potential Forest Service loss under Alternative 6 to be \$754,823.

98. Even that estimate in the Planning Record understates actual public expenditures. It relies on outdated and incomplete “budget allocation costs and management expenses” as estimates of the costs incurred by the Forest Service. The budget estimates do not reflect accurately the costs borne by the Forest Service in administering the Threemile timber sale.

99. The Forest Service itself has recognized in its annual monitoring reports that these numbers are inaccurate and should be revised.

100. Accordingly, the Forest Service has not disclosed the actual costs it will occur in administering the Threemile timber sale, and it has relied on the mistaken and misleading assertion that Alternative 6 will result in positive economic returns.



SCS 14 | All these comments on the Threemile project apply to the Scratchings DEIS as well, and we incorporate them by reference here.

## **The Socio-Economics Section Of The DEIS Is Incomplete, Inaccurate, And Ties Improperly To The Forest Plan**

SCS 15 | This section of the DEIS is cursory, inaccurate, and suffers from the same tiering to an outdated Forest Plan that other sections of the DEIS suffer from. Assertions that high paying timber industry jobs are not being replaced by equally high paying jobs in the retail and service sectors (which includes aspects of the tourism industry) are not accurate if post 1997 TLMP/post pulp mill conditions are being discussed (DEIS pg. 3-178). The average wage in the retail and service sectors is lower primarily due to the large numbers of entry level jobs in these sectors, jobs which the timber industry never generated. But the tourism industry alone produces a large number of skilled job opportunities. Many more than the timber industry has produced for years and probably more than the industry produced at its height. These jobs include lodge owners and managers, boat captains and boat owners involved in chartering fishing trips and marine based wildlife tours, captains and pilots of larger tourism related vessels, fixed wing aircraft and helicopter pilots who are involved in conducting tours and transporting clients, outfitter-guides involved in the ever increasing hunting and wildlife viewing industries, the hundreds of shop owners, restaurant owners, and managers of businesses that cater to tourists, artisans whose wares are sold in shops, and those business owners, managers of businesses, and their skilled employees that sell and transport supplies to lodges and shops. A recent article in the Juneau Empire notes that there are 13,000 jobs in Alaska that are generated from the wildlife viewing portion of the visitor industry alone (July 12<sup>th</sup> 2006, Panhandle Wildlife Gets New Scrutiny On State Coastal Trail). In 2005 average employment in the S.E. Alaska scenic and sightseeing industry was 664 per month (AK Dept. of Labor Current Employment Statistics, 2006). This number does not include the majority of the tourism based jobs in the retail and service industries that were discussed above. Employment in the timber industry from both State, private, and Federal Lands was 449 per month on average. It is obvious that the future of the S.E. Alaskan economy will be tied to a visitor industry which is dependant on a pristine environment. Yet the F.S. continues to spend 10 times more on timber than they do on all other uses of the forest.

SCS 16 | The Socioeconomic section of the Scratchings DEIS does not do the reviewer any service by its cursory and inaccurate portrayal of the southeast Alaskan economy, and instead serves only to reveal the Forest Service's continued single minded focus on timber.

## **The DEIS Fails To Comply With NEPA**

SCS 17 | NEPA requires that an environmental impact statement "shall provide full and fair discussion of significant environmental impacts, and shall inform decision makers and the public of the reasonable alternatives which would avoid or minimize adverse impact." 40 CFR 1502.1. The biodiversity, wildlife and OGR section fail to provide a full and fair discussion of impacts and fail the requirement that "Environmental impact statements shall be analytical rather than encyclopedic 40 CFR 1502.2 (a). Instead these sections merely provides vague descriptions of



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the various alternatives, failing to provide any analysis on the alternative's impacts on wildlife viability, habitat quality and the extent to which each alternative fulfills the TLMP objectives.

### The DEIS Contains An Inadequate Old Growth Reserve Analysis

- SCS 18 The Interagency biologists recognized that placement and design of old-growth reserves (OGRs) on Prince of Wales Island is particularly important to preserve deer habitat due to impacts of logging and road building (PR 0376). For this reason we urge the Forest Service to adopt the interagency recommended biologically preferred old-growth reserve design for all VCUs.
- SCS 19 It appears that documents are missing from the planning record related to the interagency OGR review. We were only able to find a Craig-Thorne Bay area review (which does not include the Suemez Island review) and an Suemez OGR documents from 8-23-1999 signed by the Forest Service biologists but not representatives from the USFWS and the ADF&G as is usually the case. While this later document does indeed make OGR recommendations it references
- SCS 20 numerous alternatives not provided in the document or elsewhere in the planning record. Further,
- SCS 21 no maps of the alternatives under review by the interagency team (commonly referred to in the document as 3, 3A etc) are available in the planning record. It is therefore impossible for the public to understand if the interagency reserves being presented in the DEIS are the ones selected by the interagency biologists or are one of several designs the interagency biologists were considering. This is concerns arises due to the fact the information provided by the interagency
- SCS 22 report provided in the planning record regarding acres and POG for their recommended reserve design for several VCUs does not match that presented in table 3B-2 of the DEIS.
- SCS 23 It also does not appear that the private land portion of VCU 6340 was considered in designing the OGR. It is impossible to properly design old growth reserves without taking into account the cumulative impacts of logging and development of ALL lands within the VCU. In discussing the basic criteria for allocating small old-growth reserves, TLMP defines such reserves as "a contiguous landscape of at least 16% of the area of each Value Comparison Unit." TLMP Appendix K. If the intent was to create these reserves based only on the USFS owned land in each VCU, TLMP would clearly state so. Instead the standard selected in the Forest Plan is "16% of the area of the VCU." Any interpretation that excludes all parts of the VCU, is contrary to TLMP.
- SCS 24 We are also unclear why the DEIS mentions marbled murrelet reviews having been conducted around Suemez Island in the context of VCU 6330 when the document fails to mention what those surveys found. Further, we could not find a copy of these referenced surveys in the planning documents.
- SCS 25 In sum, the incomplete and vague information contained in the DEIS make it impossible to determine the ability of these reserves to protect wildlife viability and to maintain the integrity of the Forest-wide old growth habitat conservation strategy. Such analysis does not constitute the "hard look" that the Forest Service is obligated to provide under NEPA.

### The Scratchings Project Fails To Protect Wildlife Corridors And Connectivity

The TLMP recognizes the importance of protecting wildlife corridors and specifically requires a review of landscape connectivity. This includes specific direction to provide stands of productive old growth as corridors where existing corridors are insufficient (TLMP 4-120). The 1998 TLMP Implementation Directive also requires an evaluation of landscape connectivity and beach fringe connectivity. It specifically requires the Forest Service to work with ADF&G and USFWS to consider maintaining additional habitat during project-level analyses and to provide for designation of additional corridors in some situations. Given the impact of past logging of portions of the Scratchings Project area, this is exactly the type of situation envisioned by TLMP and the 1998 Directive.

SCS 26 | The DEIS does a poor job of analyzing wildlife corridors and connectivity issues including those between the OGRs and the remaining corridors of high-volume old growth timber. Connectivity throughout VCUS 633, 634 and 635 were noted as concerns by the wildlife biologist yet these concerns are not reflected in the DEIS (PR 0498). We are especially concerned about connectivity as a result of further development of VCU 635 (the Delores watershed). The wildlife Biologist recognized that any units harvested in this VCU will result in blocking off the entire watershed (PR 0498). In fact the issue was so important a preliminary alternative was designed to deal with this issue. The Wildlife Biologist also recognized connectivity between the two streams in the northern portion of VCU 633 as a concern. The DEIS fails to present these significant issue to the public in clear violation of the NEPA.

SCS 27 | Please provide the public with a detailed analysis of wildlife corridors and connectivity in relation to this project in the FEIS. Should the Forest Service move forward with planning on this project, we request that identified corridors be dropped from any consideration for harvest or road construction.

#### The DEIS Is Grossly Inadequate In Discussing Impacts To Small Mammals

The Tongass is home to 54 species of mammals including 24 species or subspecies that are endemic to the stretch of the North Pacific coast encompassing southeast Alaska (MacDonald and Cook 1996). Endemic species of the Tongass often have small populations and are at special risk as a result of human-caused disturbance (TLMP Peer Review 1996). Despite this viability concern the DEIS does a miserable job of discussing the presence of and impacts to mammals, including endemic species. Of particular concern are: *Glaucomys sabrinus* (a species of concern on Prince of Wales Island), *Sorex monticolus*, *Microtus longicaudus*, *Peromyscus keeni*, *Sorex monticolus* and *Mustela erminea* which has been recognized as distinctive with a very restricted distribution (Fleming and Cook 2002). We also believe it is likely one or more species of bats are found on Suemez Island. Despite many of these species being linked to forest habitat, the only species on this list discussed in the DEIS is the endemic Suemez Island ermine.

SCS 29 | First, we find the statement made in the DEIS that "few mammal species are found on Suemez Island because of the geographic isolation and the distance to the mainland." (DEIS 3-19) misleading at best. This statement, presented in the DEIS as the lead and only introduction to the wildlife section, completely ignores the fact that geographic isolation is often directly linked to



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SCS 29 | species endemism. The DEIS never mention endemism and the unique risks posed by  
cont. | development on small islands such as Suemez.

SCS 30 | Further, while Suemez has had some small mammal surveys done to date, they have been  
extremely limited and therefore there is much that is unknown. From the limited surveys done  
and specimens collected to date it is known that some of the lineages on the island are likely  
distinctive placing them at increased risk for insuring long-term viability. We believe this is the  
exact case for which the TLMP adopted the need to perform site-specific small mammal surveys;  
however no project level surveys were done for this project in clear violation of the TLMP.

SCS 31 | Before the DEIS can make the bold statement that small endemic mammals will be protected  
surveys for such mammals must be conducted as required by TLMP. Second, a comprehensive  
habitat association studies, particularly in pre- and post-logging areas, should be done to  
determine existing or potential threats from logging activities on the island.

SCS 32 | The DEIS states that marten have not been analyzed in the DEIS because marten standards and  
guidelines will not be applied for this project. Given the past harvest of Suemez and surrounding  
areas we believe the marten standards and guidelines must be applied to this project. Further,  
little is know about the genetic composition of marten on Suemez; until this is determined the  
Forest Service should be applying the precautionary principle to any actions which may put at  
risk the long-term viability of this species.

SCS 33 | Because of its association with old-growth forest and concerns about viability marten were  
selected as an MIS in the 1997 TLMP. Even if we agreed that marten retention standards do not  
apply, that does not relieve the agency's of the duty to analyze impacts to this species in the  
DEIS.

### The DEIS Fails To Discuss Impacts To Management Indicator Species.

SCS 34 | The Scratchings Wildlife Report chose five **management indicator species** (MIS) for analysis:  
the Sitka-black tailed deer, Alexander Archipelago wolf, the Prince of Wales Flying squirrel  
(chosen partly for its high risk to long-term viability and dependence on old-growth habitat) and  
the Hairy woodpecker and Brown creeper sapsucker (selected for old-growth association and  
snag dependency) (PR 0498; 0342). It is unclear while discussion of only two MIS, deer and  
wolf, are presented in the DEIS.

### The DEIS Fails To Adequately Assess Impacts To The Queen Charlotte Goshawk

SCS 35 | The planning record indicate more goshawk presence in the plan area that that recognized in the  
DEIS. For example, the Wildlife Report references documented goshawk sightings on Suemez  
Island over many different years, including those when the known nests were inactive (PR 0498).  
For example, IDT notes from February 25, 2003 recognize that a potential active goshawk nest  
and a possible sharp-shinned hawk nest were found. We found no follow-up regarding the status  
of this nest. IDT notes from October, 2004 state a possible goshawk was seen in unit 633-020.  
SCS 36 | The Wildlife Report (May 2005) also recognizes the possibility of a goshawk around unit 633-  
020 and states four goshawk nests are know to occur around the Point Refugio area. Given the



- SCS 37 | northern portion of this area has further development proposed by this project, information is required regarding proximity of nests to the proposed units as well as whether the birds fledging and hunting area would extend into these units. If so these impacts must be disclosed and analyzed in the FEIS.
- SCS 38 | Lastly, the DEIS makes it clear than not all units were surveyed for goshawks with no explanation as to why not. Neither the DEIS or the Wildlife Report provide information regarding the survey protocol used or the times of years such surveys were conducted. This information is important to insure the best scientific methods are being employed. The portion of the Wildlife Report discussing surveys has been inexplicably blacked out. (PR 0498).
- SCS 39 | Lastly, the DEIS fails to discuss goshawk use in the area for activities besides nesting, including foraging and winter habitat use (reliance for winter prey availability) which are limiting factors on goshawks in SE Alaska. The lack of information available in the DEIS regarding forest structure at present, as well as post-project and at stem-exclusion, makes it impossible to evaluate the impacts on potential goshawk habitat. Further, the DEIS also fails to discuss the impacts of road construction and logging, which can deter goshawk nesting and foraging in impacted areas. In sum the DEIS discussion of impacts of this project on the Queen Charlotte goshawk fall grossly short of meeting the hard-look analysis requirement of the NEPA.

**The DEIS Fails To Demonstrate That Heron Rookeries And Raptor Nests Are Being Protected As Required By The TLMP**

- The TLMP requires project level inventories be conducted to identify heron rookeries and raptor nesting habitat using the most recent inventory protocols and provides for a 600 foot nest buffer (TLMP 4-116). There is no discussion of such inventories being conducted for this timber sale.
- SCS 40 | Please complete the required surveys for herons and raptors required by the TLMP and make the information available to the public before proceeding with this project.
- SCS 41 | Despite the apparent lack of inventories performed, there are at least two known sharp-shinned hawk nests on the island- one near Port Refugio and the other by units 635-006 and 635-007. (PR 0498) These nests are not mentioned in the DEIS. At least two species of owl have also been documented on Suemez island, great-horned and pygmy (PR 0498). Again the DEIS fails to make mention of this and it appears no surveys have been done to determine how this project may impact nesting habitat for these species.

**The Scratchings Timber Sale Does Not Protect Marbled Murrelet Nests**

- The TLMP requires a 600-foot circular buffer of undisturbed forest surrounding marbled murrelet nests. Because the Forest Plan provides specific direction to protect such areas, it is implicit that to do so one must first survey for nests. Without conducting site-specific project inventories, it is impossible to locate, and therefore protect habitat for the murrelet as TLMP intended. The DEIS mentions Marbled murrelet reviews having been conducted around Suemez Island but fails to discuss the findings of those reviews in the DEIS and fails to include the
- SCS 42 |

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- SCS 42  
cont. | referenced reviews in the planning record (DEIS 3-38). Other planning documents reference surveys including more than 200 detections made during a land survey near Bocas Bay in VCU 0635 on one morning in 1993 (PR 0498). Despite the lack of project wide surveys an eggshell was found within 600 feet of unit 635-089 (Id.) We saw no evidence of a nest buffer being applied to this area in the unit cards. We request specific inventories be conducted to locate marbled murrelet nests in the project area.

### The DEIS Fails To Provide Justification For Adopting Clearcutting As A Logging Method

The NFMA imposes significant restrictions on the use of clearcutting in the national forests and requires a finding that clearcutting is the optimum logging method for the site. For the Scratchings logging project, the proposed action will apply clearcutting on approximately 1,426 acres of 1,573 total acres slated for harvest. Similarly, Alternative 3, the preferred alternative will clearcut 965 acres and harvest only 84 acres with two-aged management.

- SCS 43 | While the DEIS offers a brief explanation of what these various logging methods are we could find no explanation in the timber section of the DEIS or elsewhere explaining the justification for using clearcutting on the vast majority of acres to be logged.

### The DEIS Fails To Adequately Address Impacts To Wetlands

- SCS 44 | Recognizing the many important functions of wetlands, Executive Order 11990 was put into effect. The Order states that new construction should not be located in wetlands unless the head of the agency finds (1) that there is no practicable alternative to such construction, and (2) that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. There is no evidence in the DEIS that the Forest Service has attempted to comply with Executive Order 11990. In fact the alternatives range from impacting 1,080 to 563 acres of wetlands from logging. While the DEIS states complete avoidance of wetlands can not be avoided, it does recognize steps can be made to minimize impact to wetlands from this project by altering proposed road locations and implementing specific mitigation, BMPs and harvest practices. However, rather than design the project to incorporate these mitigation possibilities, thereby complying with Executive Order 11990, the DEIS merely states that these steps can be implemented to minimize impacts to wetlands (DEIS 3-147 emphasis added). Under the Executive Order if impacts can be mitigated then they must be. Therefore for all practical purposes, the Scratchings project ignores this Executive Order.

- SCS 45 | Further, while the DEIS lists the acres and percentages of wetlands in the area to be impacted, it is completely devoid of analysis regarding indirect impacts from logging and road construction important to determining the effect on the survival and quality of the wetlands including: water supply, quality, recharge and discharge; flood and storm hazards; sediment and erosion; maintenance of natural systems, including conservation and long term productivity of existing flora and fauna, species and habitat diversity and stability, hydrologic utility, fish, wildlife, and other uses of wetlands in the public interest, including recreational, scientific, and cultural uses



SCS 46 (See 42 F.R. 26961, May 24, 1977). Lastly, the FSEIS fails to describe the construction specifications for the road in sufficient detail to assure that the road will not harm wetlands instead making vague unsupported statements.

## Maps Provided In Scratchings DEIS Are Inadequate

There are significant shortcomings with the maps provided in the Draft Environmental Impact Statement (DEIS). Accurate maps are critical to the public's ability to weigh the costs and benefits of a timber project. The Forest Service's hope that the public and others will provide meaningful and site-specific comments is meaningless if the agency does not provide the public with the means to do so.

Problems with the Alternative Maps (Figures 2-1 through 2-5) in Volume 1 include:

SCS 47 All the action alternatives proposed will modify the current conditions on Suemez Island. It is difficult for the public to assess those changes if they are not presented in one map that shows both the current conditions as well as the anticipated future condition. Such a map would combine the features of the Alternative 1 map with the features from the action alternative in question. These maps, one for each action alternative, would thus present the public with a clearer understanding of the anticipated future condition of the island.

These maps would allow the public to better weigh the pros and cons of logging significant amounts of Alaskan old-growth from an island already heavily impacted by past logging operations. For example, the impacts of logging units 635-012 – 635-016 (an area of approximately 137 acres containing approximately 4.5 mmbf of timber) on wildlife connectivity would be better understood if the existing clearcuts in the area, combined with the anticipated clearcuts, were displayed in a single map. This map would better present the anticipated future condition of the area should the action alternative in question be selected by the Forest Service.

SCS 48 The same is true for anticipated cumulative impacts to fisheries, roadless areas, visual integrity, remaining Productive Forest Condition Classes, deer winter range, the area's ability to contribute to future needs for timber, and other important trends. Although some of this information is available throughout the document, having it presented in one map will greatly increase the public's ability to meaningfully comment on proposed Forest Service actions.

Of particular concern to this project are the impacts to the Dolores Watershed and to the mapped roadless area, Suemez Inventoried Roadless Area (IRA). These are identified as two of the three Significant Issues raised by the public during the scoping process (DEIS at 1-16).

SCS 49 The Dolores Watershed contains important fish habitat. It is an area of steep slopes, extreme wind, and previous logging. The area is only slowly recovering from the "long term impacts to stream and fish habitat," and conifer regeneration "remains minimal" in much of the area (DEIS at 3-99). Including a dark line denoting the Dolores Watershed on each action alternative map would enhance the public's ability to weigh the costs and benefits of additional logging in an area that has already been heavily impacted by previous logging.



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SCS 50 Likewise, the Suenmez IRA is noted for a variety of non-timber uses. The area possesses outstanding wildlife, fisheries, hunting, subsistence, cultural, and tourism values that merit protection from development. There is local and national support for managing this roadless area in an unroaded condition (TLMP SEIS App C at 2-300). Denoting this area on each action alternative map would greatly increase the public's ability to judge whether building new infrastructure and clearcutting hundreds of acres in such a diverse and productive area is in the public's best long-term interest.

SCS 51 Lastly, the coloring on the Alternative 1 map (figure 2-1) is difficult to differentiate. The agency could greatly increase the usability of the map by demarking VCU boundaries in a bright color, such as red. Likewise, the roadless areas would be more apparent if their hatch marks were another bright color. Making these simple changes would help convince the public that the Forest Service is actually trying to provide information, not hide it.

### Problems with the Unit Card Maps include (DEIS Appendix B 3-232):

SCS 52 The unit cards presented a deficient. They fail to show the public: steep slopes, soil Mass Movement Indexes, critical marten habitat, blowdown risk, and roadless areas. Although there is often discussion of some these factors in the text of the Unit Cards, the public would be better able to weigh the impacts and benefits of this proposed action if this information were presented in a clear and visual fashion.

This is particularly true of the areas of areas that contain steep slopes, high risk of windthrow, and high landslide potential. As noted in the text, this is a significant number of the units in the project area. How logging on these unstable areas will impact the other myriad uses of the project area, in particular fisheries and related subsistence, recreation, and tourism activities, is of significant importance to the public and their ability to comment on this proposed project.

### DEIS Fails To Adequately Analyze The Impacts Of Logging In Dolores Watershed

As the Forest Service is aware, further logging in the Dolores Watershed on Suenmez Island is a significant concern for members of the public, other land management agencies, and the conservation community (DEIS 1-16, DNR ACMP comments). There are roughly three miles of Class I streams, and three miles of Class II streams, as well as over 11 miles of Class III streams in the area, making it one of the most productive watersheds on the island. Runoff in this watershed is "extremely efficient" (DEIS 3-99) due to the area's steep terrain.

Approximately 19% of the watershed has already been logged, resulting in "windthrow, landslides and accelerated erosion" (DEIS 3-99). This has led to "increased sediments in the [mainstem] channel; increased channel width; decreased channel depth; and loss of channel complexity" (DEIS 3-99). Previous stream buffers have failed due to windthrow, further degrading the area's ability to sustain its fisheries. The cumulative impact of these logging and road building activities has substantially "inhibited the streams ability to recover naturally in a reasonable period of time" and "is a concern for existing and future fish habitat" (DEIS 3-100).

5CS 53 Despite these significant issues, the Forest Service's Proposed Action calls for more than doubling the acreage logged in the watershed (DEIS 2-21). Although the Forest Service includes an Action Alternative designed to address these concerns, Alternative 4, that alternative still calls for almost doubling the acreage logged in this heavily impacted watershed. Either alternative will have significant impacts to the watershed, further degrading its ability to return to a natural condition. These cumulative impacts require a thorough and well-researched investigation.

5CS 54 What sort of monitoring will the Forest Service conduct in order to document the long-lasting impacts to this important watershed that result from continued logging? How will this monitoring be paid? How will the existing "red pipes" be repaired, and what sort of mitigation measures will the agency undertake to ensure that further damage does not occur in the future?

5CS 55 The Forest Service is beginning to address management of second growth stands throughout the Tongass. As is increasingly understood, many of these areas require further Forest Service management once their old-growth timber has been logged. There is no analysis of how increasing this burden in a steep, windthrow and landslide prone area will be in the public's best long term interest. Likewise, there is little analysis of the economic costs of such future management requirements, or the economic costs associated with further degrading one of the island's premier fish producing watersheds.

## **The DEIS Fails To Adequately Address Impacts Of Logging On Steep Slopes**

As noted in the map section, there is a significant amount of logging and road building proposed in areas with steep slopes. This obviously has weighty consequences for the future condition of the island, as logging and road building have been shown to lead to increased landslide and blowdown potential. Indeed, the analysis of previous logging in certain watersheds, such as Dolores, shows that such activities lead to significant long-term impacts to the diverse other uses of the forest.

5CS 56 Although it is impossible to determine the extent of windthrow or landslide prone areas throughout the project area, due to their not being graphically represented in the Unit Cards, the text of the Unit Cards make it clear that a significant portion of this project will impact areas that are already susceptible to disturbance. Given what is already known, some of which is documented in the DEIS, about unstable soils, landslide and windthrow areas, exasperating these conditions with additional logging and roading is not in the public's best long term interest.

## **DEIS Has Inadequate Analysis Of Heritage Concerns**

Although the Forest Service spends two pages (DEIS 3-202), of well over 500, discussing the potential impacts to Heritage Sites on the island resulting from this proposed project, this analysis barely scratches the surface. Discussions with members of the Hydaburg and Craig Community Associations indicate that there is a strong likelihood of not only Native, but Spanish, heritage sites on the island. Although these may be along the coastline, and protected by the 1,000 foot coastal buffer, the analysis contained in the DEIS does not leave the public with the feeling that the Forest Service is serious about discovering and protecting these important sites. This is particularly true in the Port Refugio and Port Santa Cruz areas, areas known for



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SCS 57 | their recreation use. Please provide further analysis illustrating that these issues are being considered and monitored.

For example, what sort of process is in place to ensure that should an additional site be uncovered it will be protected? What sort of monitoring of the dozen or so sites known to be on the island will the Forest Service undertake? How will these activities be funded?

### DEIS Contains Little Or No Analysis Of Recreation Concerns

SCS 58 | There is little analysis of the current or anticipated future needs for recreation on the island. Although it is noted that the island is used for hunting, beach combing, hiking, and exploring caves (DEIS 3-197), there is little analysis of the demands of any of these activities on the landscape. For example, there is no discussion of the island's carrying capacity as it relates to recreation. There is no analysis of how increased road density will influence the recreational activities on the island, or how increased motorized recreation on the island will displace human-powered recreation.

SCS 59 | Although the Suez Roadless Area is noted for its high opportunity for solitude and primitive recreation (TLMP SEIS, App C at 2-294), there is little analysis of how adding an additional 20 miles of road will impact these opportunities.

SCS 60 | Likewise, the impacts of changing the Recreation Opportunity Spectrum (ROS) classification for hundreds of acres in order to better accommodate logging are not fully examined. Where is the demand for increased motorized recreation? Although the Forest Service may state that "timber harvest is generally considered a benefit" (DEIS 3-200) to recreation, that does not make it so.

SCS 61 | Before changing the character of recreation opportunities on the island, the Forest Service needs to examine what the carrying capacity for motorized recreation is, how an increase in motorized recreation will impact endemic mammals, deer, wolves, and other sensitive species, and what these impacts mean to the people who hunt and/or trap on the island as part of their traditional subsistence activities.

### Analysis Of Impacts To Deer, Subsistence, And Wolves Is Erroneous And Incomplete

SCS 62 | Analysis of project impacts to deer is a key issue because deer are an important subsistence species and are the primary prey of wolves. As a result of errors in the deer modeling that was performed and the incomplete analysis of wind disturbance (as mentioned elsewhere in these comments), it is not known at present whether the action alternatives would satisfy the Forest Plan's standard and guideline (as modified by the 1998 clarifications and a later annual Tongass monitoring report) of providing a habitat capability of at least 18 deer per square mile. The claim in the DEIS that post-project habitat capability would be "well above" that level is accordingly unsubstantiated, and a thorough reanalysis is necessary.

#### Deer Modeling Issues

An Error is Obvious in the Deer Model Results.



SCS 62  
Cont.

The project's latest Wildlife Report,<sup>1</sup> a July 2005 draft, presents confusing data on deer habitat capability that conflicts with similar data in the DEIS. The report says:

"Before timber harvest, WAA 901 had an estimated habitat capability at 33 deer/mile<sup>2</sup>. In 1995 habitat capability in WAA 901 is estimated at 32 deer/mile<sup>2</sup>, or 97 percent of the historic habitat capability (Forest Plan Appendix 12 to Appendix N, 1997, p. 1). GIS runs for Scratchings show the Island currently being capable of supporting about 36 deer/mi<sup>2</sup>." (Id., p.5)

In contrast to the TLMP estimate of a habitat capability decline from 33 to 32 deer per square mile (from 1954 to 1995), the DEIS says the decline from 1954 to 2005 deer was 39 to 36 deer per square mile. Not only are the 1954 figures significantly different, the difference is implausible as shown in the following chart.

	Modeled Habitat Capability, by Year			Deer Multiplier @ HSI = 1
	1954	1995	2005	
TLMP, App. 12 of App. N	33	32		125
Scratchings Wildlife Report	39		36	100

The habitat capability estimates in TLMP are based on applying a multiplier of 125 deer per square mile to the deer model results. (1997 TLMP, p.3-367) Later, in 2002, the value of the multiplier was officially changed<sup>2</sup> by the Forest Service to 100 deer per square mile, with both multipliers applying to the same HSI value in the model.<sup>3</sup> The Scratchings project is using the newer multiplier. (Footnote to DEIS Table 3S-3, and Wildlife Report p.15) The change in the multiplier should have resulted in lower habitat capability estimates in the DEIS than in TLMP, not higher ones.

No other changes in the model or its usage have been documented since 1997, so clearly something is amiss in the deer modeling work for this project. After applying the 2001 change to the deer multiplier (and ignoring for the moment a further necessary reduction of the multiplier -- see the next section), it seems that the DEIS capability estimate for 1954 should have been about 26 deer per square mile, not 39. This leads us to question how deer modeling was done for this project, and what changes have been made (relative to the 1997 model) in the model that was used. The DEIS, Wildlife Report, and planning record provide no help in answering these questions. That there is an error seems obvious, and it extends to all habitat capability estimates in the DEIS and Wildlife Report.

<sup>1</sup> Planning record document 0498\_scratchings\_resource\_report.doc, dated July 2005. Note that a pdf file also numbered 0498 is an earlier draft dated May 2005.

<sup>2</sup> See the FY-2000 Annual Monitoring & Evaluation Report, published in 2001.

<sup>3</sup> A further change in the multiplier is still needed, so that it applies to HSI = 1.3 (best quality habitat) in the model, as discussed elsewhere in these comments.

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### Using an Incorrect Deer Multiplier Caused Over-Estimation of Habitat Capability.

For this project, a deer multiplier of 100 deer per square mile for an HSI of 1.0 was applied to deer model results to determine habitat capability. That use of the multiplier was incorrect because it was derived to apply to best quality habitat, which has an HSI of 1.3 in the model that was used. This has resulted in a substantial over-estimation of the carrying capacity of deer habitat, in addition to other over-estimation caused by the error described previously. The current, incorrect deer multiplier usage was adopted through the FY-2000 Annual Monitoring and Evaluation Report. This adoption was based on 1997 letters (Person et al. 1997) from the principle authors of the 1996 Wolf Assessment (Person et al. 1996) to the Regional Forester and TLMP Team Leader. The multiplier was derived for an earlier deer model (Suring et al. 1992), for which the maximum HSI value (representing best habitat) was 1.0. That fact is obvious from the HSI vs. pellet group chart in the letter, and has been confirmed by Dave Person (pers. comm. 2005). Further confirmation was recently given by ADF&G in its comments to the Forest Service on a preliminary draft of the Tongass Conservation Strategy Workshop proceedings. (ADF&G 2006) The latter document states:

“The only empirical review of HSI values was Dave Person’s work relating HSI scores for pellet survey transects and the deer population density along those transects estimated from average pellet groups per plot. That analysis showed that:

1. HSI scores positively correlated with deer density estimated from pellet groups but there was much noise (not surprising).
2. An HSI score of 1 corresponded to a density of 100 deer/mi<sup>2</sup>. At the time of the analysis in 1996, an HSI score of 1.0 was the highest score possible. Subsequently, the highest HSI score was increased to 1.3. Therefore, the 100 deer/mi<sup>2</sup> used by Person would now apply to an HSI score of 1.3.”

We note further that in cases where deer occupy their winter range all year, as on Suemez and Gravina Islands, a reduction of the value of the multiplier may be warranted. For the Gravina Island project ADF&G requested that the Forest Service use a multiplier of 35 rather than 100 deer per square mile. (ADF&G 2002) ADF&G’s Wildlife Conservation Division should be specifically asked to advise on the multiplier that should be used for this project.

SCS 64

### The Deer Model is Operating on a Dataset Uncorrelated to Habitat Quality.

Caouette et al. (2000), a Tongass-wide study, established that the Vol Strata dataset that is built into the current deer model is statistically uncorrelated to old-growth habitat quality that is important to deer in winter. The Alaska Department of Fish & Game recently advised the Forest Service that “it would actually be better to use the old TimType classification (which is what the deer model was first based on)” for wildlife analysis until the new size-density dataset is available for use. (ADF&G 2006, parenthetical comment original.) This suggests that the Suring et al. (1992) deer model should be used rather than the current deer model. The TimTyp dataset is built into that model, rather than the Vol Strata dataset. (Using the Suring model also would automatically result in the deer multiplier being correctly applied, since it was designed for the Suring model.) The Forest Service has consistently claimed that project-level is required by the Forest Plan to use the current deer model. Even if this is true, the agency has the ability to amend the plan, and even without doing that there is nothing to preclude project-level planning from using both models, comparing the results, and disclosing the results in the NEPA document.



SCS 64  
cont. | At a minimum, the dataset issue must be fully and fairly discussed in the EIS as required by NEPA. NEPA also requires that the best science available be utilized, and we contend that this means using either the Suring model alone or in addition to the current model, and using TimTyp rather than Vol Strata for other kinds of wildlife analysis (for deer and other species)..

The Forest Service consistently cites Doerr et al. (2005) to defend its use of Vol Strata in deer modeling and other wildlife analysis. We believe to the contrary that the study the paper is based on was not designed to reach a statistically valid conclusion of the dataset issue, and that in any case the limited geographic scope of the study and peculiarities of the study area preclude applying the results Forest-wide. In making its request to use TimTyp rather than Vol Strata for wildlife analysis, ADF&G apparently has reached a similar conclusion.

SCS 65 | The Deer Model Assumes the Non-linear Habitat/Population Relationship is Linear.

Person (2001), based on extensive wolf research on Prince of Wales island has concluded that where there is wolf predation, the general decline in deer numbers as a result of habitat loss is disproportionately higher than the loss of habitat. The deer model is blind to this non-linearity. It assumes a linear relationship between habitat capability and habitat quantity.

This must be disclosed and fully and fairly discussed in the EIS. The non-linear effect needs to be accounted for in some manner in the estimation of project effects (direct, indirect and cumulative) on deer, subsistence, and wolves. Significantly, this needs to involve the effects not only the effects of logging but also of future natural windthrow throughout the project area. The analysis needs to allow for the on-going climate change-induced increases in storm intensity and frequency (a documented phenomenon) and the corresponding increased loss that can be expected of old-growth habitat from extensive blowdown and stem snap.

SCS 66 | For This Project, the Deer Model Has Been Used at an Inappropriate Scale.

It is well known that the reliability of the deer model decreases at finer geographic scales. It works best at the Forest-wide scale, and is not recommended for use at the project level scale. It has been recommended for use only at the scale of one or more WAAs, at the finest on a case-by-case basis.

The Scratchings project encompasses all of one WAA (number 901), but the WAA is a small one that is no larger than many project areas on the Tongass National Forest. Therefore, deer modeling for the project area should be compared with deer modeling that encompasses all or part of WAAs 1105 and 1302. We believe this is sensible to move model use into a more reliable context and because wolves (whose primary prey is deer) migrate between Suemez Island and adjacent land masses. We suggest consulting the ADF&G Wildlife Conservation Division concerning this.

SCS 67 | Shortcomings in the Deer Model and Its Data Were Not Disclosed and Discussed.

The many shortcomings of the deer model are apparent from reviews of the model made from 1995 though 1997 by the Forest Service and US Fish and Wildlife Service, other documents cited herein, and our comments. Some of the shortcomings have not been mentioned explicitly in our comments (i.e. blindness to juxtaposition of habitats), but are important and have been identified in the reviews. The reviews include Kiester & Eckhardt (1994) and the model peer



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cont. reviews attached to it, the TLMP expert panels on deer and wolves, and independent peer reviews solicited by USF&WS. NEPA requires the up-front disclosure of shortcomings in models and data (Lands Council v. Powell, 9<sup>th</sup> Circ.) and the full and fair discussion of significant issues. The shortcomings have not been disclosed, and how the deer model can reasonably be applied in light of the shortcomings is a significant issue that has not been discussed.

SCS 68 **We Challenge Common Forest Service Defenses Of Its Deer Analysis Methods**

In responding to EIS comments and deciding appeals the Forest Service resorts to several general defenses against criticism of its deer modeling methods. We challenge those defenses, lest they be used to dismiss out comments.

1. **Dismissing Deer Modeling Complaints As Forest-Level Issues Is Improper.**

The Forest Service typically contends that several of the deer modeling issues are "Forest Plan-level issues" and that it is "inappropriate to adjust the model on a project-level basis," and various other wording to similar effect.

There are two issues here, of which the Forest Service has considered only one. First, it may be that the Forest Service is indeed constrained by its Forest Plan, other policy, or internal or external political-level pressure from making a decision that is based on a project-level adjustment to the deer model (including the deer multiplier). That is the issue the agency has considered.

The second issue, which the agency has always failed to consider, is that NEPA establishes an information-driven rather than policy-driven process, and it accordingly requires a full and fair discussion of the issues and a hard look at the alternatives. This requires consideration of all relevant information and documentation regardless of how the information and documentation squares with higher level plans or policy. In the case of deer modeling for the Scratchings project (and other projects) it may be that following these requirements of NEPA will suggest planning practices or a project decision that conflict with higher policy or the Forest Plan. If so, that realization is a valuable fulfillment of the vision of NEPA and an indication of a probable need to improve the higher plan or policy. Instead, the Forest Service has illegally been foreclosing this sensible dynamic between project-level NEPA process and higher plan or policy by using the latter to stymie the former.

NEPA establishes duties that are beyond the Forest Plan and cannot be over-ridden by the plan.

2. **The Forest Service's "No Documentation" Shield Is Nonsense.**

The Forest Service has consistently asserted for other projects that no documentation exists that shows the deer multiplier is being used improperly. The documentation cited in sections above clearly shows the misuse and at a minimum needs to be considered the full and fair discussion required by NEPA for significant issues.

### **The Effect Of Severe Winters On Deer, Subsistence And Wolves Has Been Inadequately Considered.**

The Wildlife Report makes but one brief mention of severe winters, and the DEIS makes none. One or a succession of severe winters can greatly depress deer populations for decades. The

extent of the impact and the ability of the deer population to rebound is a function in large part of habitat. The deer model, however, was designed only to make predictions for average winters.

SCS 69 | Severe winters need to be considered in the EIS in an analysis that is separate from the deer modeling, with particular regard to the related effects (including on deer fitness going into winter) of habitat loss from logging and the increasing intensity and frequency of wind and rain storms (see our section on wind disturbance).

It is necessary to make a distinction between weather and climate. Juday et al. (1998) observed that "A decline in the frequency of severe snow accumulations at low elevations in southeast Alaska has allowed Sitka black-tailed deer better access to critical winter forage plants." That is a climate-related observation. Weather, on the other hand, is subject to great variability within the realm of the climate. Even though less frequent, severe snow events can still be expected, especially given the chaotic nature of the weather in an era of rapid climate change. It takes only a storm bearing much moisture, not uncommon coming off the Gulf of Alaska, to encounter air near freezing to produce unusually deep snow. Even in a warming climate such events must be expected, and especially with the general climatic warming often generating high atmospheric moisture than otherwise.

## DEIS Inadequately Analyzed Of Wind Disturbance Factors

Wind disturbance (stem snap, windthrow, related erosion) is given brief mention at several points in the DEIS; however, important factors have been overlooked and an improved, comprehensive analysis is needed. A combination of the Scratchings project's location on an outer island (exposed to high winds), characteristics of the area's soils, forest stands, and topography, and increasing regional wind influence due to climate change create substantial risks that make the project's interrelationship with wind disturbance a key issue. It is an issue that has significant implications for wildlife and subsistence.

Wind disturbance is discussed on pages 3-78 to 3-81, 3-84, 3-86, 3-89, 3-90, 3-98, 3-100, and 3-115 of the DEIS, and is a topic on most of the unit cards. The primary discussion is on pp. 3-78 to 3-80 in the Timber and Vegetation section, but probably because of that section's specific focus the discussion is not thorough or comprehensive. The discussions on pages 3-98 and beyond are in sections about resources other than timber and vegetation, and are scant. We request adding to Chapter 3 a section devoted entirely to wind disturbance, on which other sections of the chapter can then expand. This comprehensive section should include a thorough discussions of increasing of storm intensity and frequency due to changing climate and of the existing wind-affected environment. The relevant direct and cumulative effects of the project could be analyzed both there and in resource-specific sections of the chapter.

SCS 70 |  
SCS 71 | In addition, a map of Suemez Island showing wind disturbance risk categories should be provided in the EIS.

### *The Effect of Changing Climate on Wind Disturbance Must Be Considered.*

SCS 72 | The following factors indicate the need to add a robust discussion to the EIS of historic wind disturbance patterns on Suemez Island, of how those patterns might be expected to change under



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565 72 | documented, on-going climate change, and of how the project will interrelate with those patterns.  
cont. | The factors are:

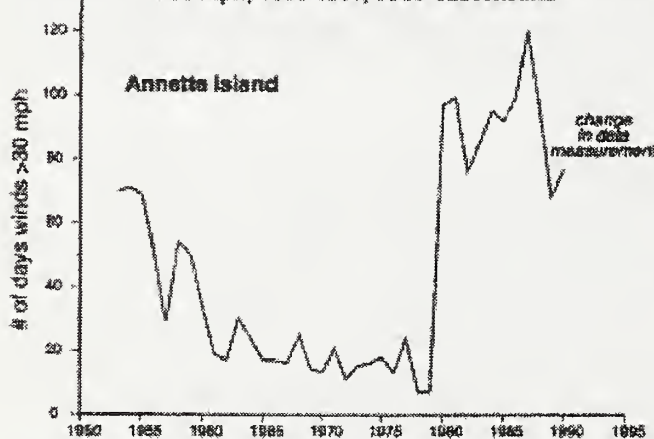
- (1) The project area is on an outer coast island that faces the open Pacific Ocean, exposed to high winds.
- (2) In Southeast Alaska, over the past few decades ...

“Storm frequency and intensity increased at the same time as the rapid rise in temperature.<sup>4</sup> The number of days with gale-force winds at coastal locations more than doubled in the late 1970s compared to the previous two decades (Figure 3.06).” ...

“Recent forest mapping in the Tongass National Forest has identified large areas composed of trees that reproduced after the previous forest was flattened apparently by single windstorms in the past. The dramatic increase in gale winds (Figure 3.06) in coastal Alaska since the 1970s suggests that the risk of windthrow of trees will be much greater.”

(Juday et al. 1998, pp.27, 29, 36, 37, emphasis added. Figure 3.06 is reproduced below.) Looking into the future the paper concludes: “Increased risk of large-scale tree blowdown across southeast Alaska” is a “high magnitude” impact that can be can be predicted with “high confidence.” (Id., in Figure 3.16, emphasis added. ) Poignantly for the Scratchings project, this was also summarized in an introduction to Figure 3.16 as an “increased risk of widespread catastrophic windthrow, especially on outer coast forest landscapes of southeast Alaska” and “increased windthrow damage around the margin of clearcuts.” (Id., p.39)

**Figure 3.06 Number of days, by year, with fastest mile wind >30 mph, 1953-1994, southeast Alaska**



565 72 | (3) As storm intensity and frequency increases in the region as a result of climate change (as  
cont. | above), winds from directions that have not traditionally been of concern for blowdown should

<sup>4</sup> The context that preceded is: “In the mid 1970s temperatures in Alaska coastal stations increased abruptly to the highest level of the 20th century; even the low period in the temperature cycle that followed was markedly warmer than any similar period in the instrument-based record (Figures 3.04 and 3.05).”



- SCS 72 | be expected to, at times, reach higher than historic speeds and possibly cause blowdown or stem  
 cont. | snap.  
 (4) Periods of storm winds are often accompanied by high precipitation. Storms and seasonal periods with high rainfall appear to be becoming more common in the region over recent years, a factor that is likely independent of total annual rainfall but which results in high soil moisture at times. "Strong winds are usually accompanied by heavy rain, and saturated soil contributes to blowdown." (Harris 1999)  
 (5) In an era of rapidly changing climate surprises should be expected, and this should be taken into account during planning as well as identified trends such those described above.

**Other Aspects Of Wind Disturbance Effects Need A Hard Look  
 And Are Absent In The DEIS**

- SCS 73 | A recent paper, *Wind in the Forests of Southeast Alaska and Guides for Reducing Damage* (Harris 1999, PNW-GTR-244) raises issues that should be considered in planning this project and in the NEPA review. The document is not mentioned in the DEIS, and apparently was not considered. It has direct application to this project, although we note that a weakness is that it does not take the changing climate into account, and instead views the climate as static. The data it is based on is nearly 30 years old, predating most of the climate changes noted in Juday et al. (1998), although some of the personal observations the author relied on may be more recent. Harris (1999) points out that "Many recommendations for reducing losses from blowdown have appeared in the literature. Most recommendations are concerned with clearcutting, especially with locating windfirm cutting boundaries and general advice on management strategy. The recommendations are based on observation and common sense with little or no experimental data. To what extent application of these recommendations has reduced damage is not known because accurate methods of evaluation have not been devised. When strong gales hit, blowdown is inevitable ..." The point here is that the effectiveness of the project's unit prescriptions, buffers, best management practices is largely conjecture, and the assessment of impacts is less certain than is apparent. This needs to be disclosed in the EIS, and a margin of safety needs to be incorporated into the actions taken in order to reasonably assure that windfirmness will be achieved.
- SCS 74 |

On a related topic, planning for this project includes "reasonable assurance of windfirmness buffers" (RAW buffers), in addition to conventional buffers and other windfirmness measures.

- SCS 75 | This is a specific use of the term reasonable assurance, in contrast to the general usage in the paragraph above. The term "reasonable assurance" is not defined in the DEIS for either of these usages. The risk that windfirmness will not be achieved is not quantified or described for any of the windfirm applications in the DEIS. The possible consequences of not achieving the intended windfirmness are not disclosed.

Based on experience and the literature, Harris (1999) recommends:

"Plan complete logging and road layout for a drainage for an entire rotation in advance of logging; identify each potential cutting unit and (wind) protection stand in advance. The progress of cutting should be planned to take advantage of windfirm boundaries, opportunities for progressively cutting toward the prevailing storm winds, and periodic salvage of blowdown."

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SCS 76 | We believe that doing this for the Scratchings project is essential to the NEPA process because it will disclose to the public the cumulative planning that the Forest Service is now engaging in for Suemez Island under the foreseeable eventual extent of logging on Suemez Island, as envisioned by the Forest Plan. This is necessary not only for NEPA-required disclosure, but also for analysis of foreseeable cumulative impacts.

SCS 77 | We note that many of the Scratchings DEIS unit cards describe the risk of windthrow as being high, very high, or extreme "at upper elevations of the unit," but decreasing to moderate or low risk at lower elevations. Perhaps these observations are true; however if so, a discussion should be provided of why the situation is different in these units than as generally described here by Harris (1999), after studying over 1000 plots on Prince of Wales island.

"Most damage occurred at low elevations, and the extent of damage generally decreased with elevation, probably because most commercial stands occur at low elevations. The higher rates of damage found at higher elevations might be attributable to increased exposure and to the thin, rocky soils."

To clarify the statement, note from Table 15 (id.) that the highest rate of damage was in the 0-200' elevation band. The "higher rates of damage" were less intense and in the 401-600' band and several bands over 1000'. Harris stated similarly (for Prince of Wales Island):

"Most blowdown occurred at low elevations, and in general, damage decreased with increasing elevation. ... Comparison of blowdown with distribution of productive forest land showed that the highest rate of blowdown (2.86 percent) occurred below 200 feet in elevation. ... A similar situation was noted in Ireland by Kennedy (1974), who concluded that reduced rooting strength at low elevations more than offsets the advantage of greater protection from the wind." (id.)

SCS 78 | The DEIS does not fully disclose what the project's planners consider to be a windfirm buffer. A description of such buffers is given on DEIS p. 3-88, but the criteria include only the width of the buffer zone (one site-potential tree height), partial cutting within the first 50 feet of the buffer to create feathering (removal of 50% of the basal area), and a roughly-described priority system for retained trees. Not mentioned and apparently not considered are factors such as character of the forest in the buffer and beyond, soil condition, topography, elevation, possible exposure to high winds, etc. Clear criteria need to be laid out to assure that windfirmness will be achieved.

SCS 79 | Finally, the Timber and Vegetation section of the DEIS made the most mention of wind disturbance, yet in its "Effects of Alternatives" subsection it fails to mention any effects of the action alternatives regarding wind disturbance.

### **Broad Consideration Is Needed But Absent Of How Project Effects Will Combine Over Coming Decades With Storm-Caused And Other Climate-Induced Or Man-Caused Habitat Changes**

After logging is completed wind disturbance caused by the clearings can be expected to occur, as well as on-going natural wind disturbance elsewhere on the island (as indicated by Harris 1999) at an increasing rate (Juday et al. 1998), with catastrophic habitat alteration, including loss of



old-growth stands, being probable for some portion of the island in addition to man-caused and natural historic alterations.

In contrast to that combination of habitat-altering processes, analysis in the DEIS assumes that the amount and quality of habitat is static, except for habitat losses directly caused by the project. For example, the deer modeling for the project looks only at the acres that are cut, and makes no allowance for project-caused windthrow beyond the units or for nature-caused windthrow that will occur over coming decades. A more realistic application of the deer model is needed, and similar considerations need to be made for analysis of effects on other species. This will necessitate making new assumptions that are better than the current one that the forest environment is static except for the project's effects. We must take habitat changes caused by nature. The question is, how much impact will this project add to that, and how should the total impact affect developing project alternatives and selecting one.

SCS 80 | Wind disturbance is a dominant and well-known environmental factor, but other factors need to be included in this broad view. The DEIS notes that Sitka spruce mortality is occurring along the coastline of Suemez Island as a result of a high spruce aphid population over the past five years, but that no aphid activity was noted in the unit pool. The high aphid activity is generally recognized as a result of climate change. The beach fringe is important wildlife habitat and is counted as a corridor. What are the implications, over time, of losing many or all of the spruce in the beach fringe? For various species how much will this affect island habitat quality generally, habitat reserve effectiveness and corridor effectiveness, in combination with island-wide old-growth habitat losses from windthrow and logging? How might these considerations affect development of project alternatives and selection?

SCS 81 | We believe the DEIS should be supplemented to incorporate this broader view of the project and the changing situation for the island.

## **Propensity Of The Project Area For Windthrow Is Reason To Drop The Project**

SCS 82 | The generally high risk of wind disturbance on Suemez Island is apparent from the DEIS and other literature. It is clear that the full depth of the wind disturbance issue for the island was not recognized during planning. Our assessment, given the inadequacy of the Forest Service's present analysis on the topic and the situation of the island in regard to changing climate, is that logging of the scale proposed is unfitting. The evidence suggests that it would be best to drop this project and instead salvage timber from the roaded portion of the island, as necessary in the future. That is an alternative that needs to be considered.

## **DEIS Provides Inadequate Analysis of Impacts to the Inventoried Roadless Area (IRA) and Wilderness Character**

SCS 83 | We can see no valid reason for moving forward with any project that directly or indirectly degrades roadless areas and associated resources given the strong scientific support for protecting Tongass roadless areas, including that of the TLMP Peer Review team (Powell et al., October 1996 and September 1997), in addition to the strong public sentiment that these areas should be



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SCS 83 cont. | protected. Further, in light of the recent decision in *Natural Resources Defense Council v. United States Forest Service*, serious illegalities with the TLMP (as discussed elsewhere in these comments) need to be addressed. Until these issues are properly resolved, any further planning within the Suemez IRA should be suspended.

We are very concerned to see that under the proposed action (Alternative 2), the Scratchings Timber Sale Project would enter into an IRA (Suemez Roadless Area). The Suemez Inventoried Roadless Area (IRA) is especially critical to maintain undeveloped because it is the last unlogged, un-roaded fish and wildlife habitat on the Island. Past logging has already encroached on the natural integrity of the Suemez IRA particularly in the northern border. According to the TLMP SEIS there has been "extensive timber harvest near the boundaries" (App. C at 2-292) of this IRA. The road-building and logging associated with this project would directly and negatively impact 734 acres within the IRA (DEIS at 3-17). Additionally, 3.4 miles of new road would be constructed within the IRA. Of the five action alternatives outlined in the DEIS, the preferred alternative (Alternative 2) would have the greatest direct effect on the Suemez Island IRA. Road systems and the effects of clearcut logging surround this roadless area to the north.

SCS 84 | The roads and clearcuts that are proposed in the currently roadless northwest portion of VCU 6340 will effectively fragment the Suemez Island IRA and significantly degrade the wilderness character, ecosystem integrity and landscape connectivity important to healthy fish and wildlife populations.

The DEIS fails to adequately analyze the potential impacts of this project on the Suemez Island IRA. Under the proposed action, the size of the Suemez Island IRA (24,356 acres) would be reduced by 25%, to 18,354 (DEIS at 3-17). The impact of a 25% reduction in the effective size of the roadless area is not analyzed in the DEIS. The DEIS also fails to adequately analyze the potential impacts of this project on the area's wilderness characteristics. We are concerned about the continual loss and degradation of potential Wilderness areas on the Tongass and the impacts these losses will have on local economies as well as fish and wildlife. The DEIS does mention wilderness as a subset of the general "Issues" section of Chapter 3 and briefly addresses the issue by including excerpts from the Tongass Land Management Plan Revision Final Supplemental Environmental Impact Statement (TLMP SEIS) description of the wilderness characteristics of the Suemez Island Roadless Area (DEIS at 3-15). The only attempt at any analysis is one sentence that simply states the resulting loss in IRA acreage under the proposed action (DEIS at 3-17). An additional attempt to address the issue is a vague sentence stating, "...the cumulative effects of increased harvest acres and road construction is likely to have a limited effect on the consideration of Inventoried Roadless Area 502 for Wilderness designation" (DEIS at 3-18). This statement is not supported by a companion analysis. The final EIS should include a thorough analysis of the potential impacts of the proposed action on the wilderness characteristics of the Suemez Island IRA. The DEIS therefore fails to satisfy the Forest Service's obligations under NEPA to consider the environmental impacts of its proposed action.

The Suemez Island IRA serves a variety of non-timber values, including important benefits to science, wildlife, subsistence, recreation, and cultural heritage. The IRA's well-drained soils support highly productive hemlock, hemlock-spruce and mixed conifer forests, 65% of which is mapped as productive old growth. The IRA also has high natural integrity and apparent

naturalness. Timber harvest and roads have adversely affected the apparent naturalness (TLMP SEIS App. C at 2-294) to some degree, yet roughly 94% of the “natural landscape has remained unaltered by human activity” (inventoried as Type I Existing Visual Condition; TLMP SEIS App. C at 2-296). The Suemez Island IRA also offers a high opportunity for solitude and primitive recreation (TLMP SEIS, App C at 2-294). The IRA also has unique geologic features including spectacular cliffs with sea caves and volcanic formations on the south and west coast (the Arena Cove/Cape Felix Special Interest Area; TLMP SEIS App. C at 2-294). This area offers many unique opportunities for scientists to study geologic processes and features, in addition to ecological studies of seabirds, coastal forests, fish and wildlife (TLMP SEIS App. C at 2-298). The island also has a long history of use by Alaska Native peoples (TLMP SEIS App. C at 2-296). In regards to recreation, the location of Suemez Island IRA (relatively close to the communities of Craig, Klawock, and Hydaburg) makes it more easily accessible and provides greater potential for recreation and tourism than other roadless areas (TLMP SEIS App C at 2-297). Also, there is local and national support for managing this roadless area in an unroaded condition (TLMP SEIS App C at 2-300). Clearly, the area possesses outstanding wildlife, fisheries, hunting, subsistence, cultural, and tourism values that merit protection from development.

It is particularly disappointing that the Forest Service has elected to pursue roadless area entry in this sale, given the U.S. House of Representative’s bipartisan passage of the Chabot-Andrews amendment to the FY07 Interior Appropriations Bill, which prohibits spending any more of taxpayers’ dollars subsidizing wasteful and economically unfeasible roadbuilding projects in the Tongass National Forest. Moreover, the overwhelming majority of the interested public supports protecting roadless areas, including – and in many cases especially – those of the Tongass. In the past few years, the Forest Service has received literally millions of public comments supporting protections for Alaskan roadless areas, through inclusion of the Tongass (and Chugach) in the Roadless Area Conservation Rule (RACR or “Roadless Rule”). More than 7500 Alaskans participated in the RACR, and 82% of them favored protecting roadless areas in the Tongass. The American public has communicated in no uncertain terms that it feels the most valuable use of roadless areas may be realized when they are left in their unroaded condition.

- SCS 85 | We oppose the Tongass National Forest’s decision to enter roadless areas of the Scratchings  
Timber Sale for several over-arching reasons related to the management of roadless areas. The  
SCS 86 | agency lacks an adequate rationale for entering roadless areas on Suemez Island, as the Ninth  
Circuit ruled in *Natural Resources Defense Council v. United States Forest Service*, 421 F.3d  
797 (9th Cir. 2005), that the Forest Service’s misinterpretation of market demand for Tongass  
Timber in the 1997 ROD for the Tongass Land and Resource Management Plan was arbitrary  
and capricious.

**The DEIS Violates NEPA By Failing To Evaluate The Effects Of Committing The  
Scratchings Project Area To Development Before The TLMP Is Revised**

NEPA bars the Forest Service from taking certain actions while preparing a programmatic EIS. See 40 C.F.R. 1506.1(c). Under the illegal 1997 TLMP, this timber sale would illegally settle the fate of this roadless area by committing it to developed status and eliminating options for



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505 87 preserving it for other multiple uses through the court-mandated revision of the 1997 TLMP. Section 1506.1 bars the Forest Service from working on a proposal covered by the pending programmatic decisions unless:

1) *The Scratchings Timber Sale is justified independently of the programmatic decision.* The NFMA mandates that all management activities approved on national forest system lands, such as the Tongass, be consistent with a lawfully adopted forest plan. See 16 U.S.C. 1604(i). The Forest Service cannot rely on the 1997 TLMP to justify proceeding with this timber sale because the court invalidated TLMP in *NRDC v. U.S. Forest Service*.

2) *The Scratchings DEIS is adequate, and* 3) *the decision to approve this project will not tend to limit alternatives in the court-mandated TLMP revision.*

None of these factors is satisfied in this case.

### DEIS Fails to Adequately Analyze Impacts of Increased Motorized Vehicle Access

In April 2003, Chief Bosworth identified unmanaged recreation, particularly off-road vehicle use, as one of the four greatest threats to National Forests. He described a litany of adverse impacts caused by off-road vehicles, including soil erosion, habitat destruction, damage to cultural and sacred sites, and conflicts with millions of other visitors. He has also highlighted the unchecked proliferation of unauthorized – or renegade - ATV and dirt bike routes across National Forests and made clear that this problem is only going to get worse.

There are multiple users of our National Forests and the Forest Service should take these interests into account when making planning decisions. OHVs are one of many uses, but this use presents a high cost to the Forest Service related to management issues. OHVs have a high potential to damage many other resources in the long-term and may substantially interfere with and undermine other uses (such as backcountry hunting, fishing, hiking, subsistence, and enjoyment of solitude).

505 88 Roads provide OHV users with increased access to wildlife and other resources. Under the proposed action for the Scratchings Timber Sale project, 13 miles of new road and 6 miles of temporary road would be built, and 20 miles of existing roads would be maintained. Total miles of National Forest System Road on Suemez Island is currently about 28 miles (DEIS at 3-27). As proposed, the total mileage of permanent roads will increase by nearly 50% to 41 miles of road (DEIS at 7). This will provide significantly more access for forest users including hunters via OHVs. Despite this, the DEIS fails to acknowledge or analyze impacts to wildlife and other resources associated with increased OHV (off-highway vehicle) access provided by new roads.

505 89 The DEIS states that the main form of recreation on Suemez Island is hunting and that hunters use OHVs to access prime hunting locations from the road system (DEIS at 3-197). However, the DEIS fails to discuss potential impacts associated with increased OHV access; rather timber harvest activity is merely stated to benefit recreation (DEIS at 3-200). An analysis of impacts to



SCS 89  
conf. | wildlife and other resources associated with increased hunter access is completely absent from the DEIS.

While we recognize that motorized vehicles, including OHVs, are a valid recreational use on Suemez Island we are concerned about additional resource damage caused by such vehicles, including that which is due to illegal riding off the road system. Increased motorized vehicle access has the potential to damage many public resources, such as vegetation<sup>5</sup>, fish and wildlife habitat<sup>6</sup>, soil<sup>7</sup>, water<sup>8</sup> and air<sup>9</sup>.

SCS 90 | **Impacts to wildlife:** The noise, pollution and very presence of off-road vehicles disturb wildlife resulting in displacement from habitat, nest or den abandonment, disruption of predator-prey dynamics and other changes in natural behavior. OHVs also reduce and eliminate vegetation. This results in a decrease in shelter, foraging areas, and perches and/or nesting sites that are critically important to birds and mammals. OHVs can also allow access for illegal harvest of wildlife. Increased OHV access is known to increase the trapping vulnerability of furbearers<sup>10</sup>. Impacts to wildlife from motorized recreation are well documented in the scientific literature, yet the DEIS inexplicably all but dismisses any such impacts associated with the extensive road-building that is proposed for this timber project.

SCS 91 | **Impacts to soils and vegetation:** The Forest Service is mandated to manage habitats to maintain viable populations of plants. The scientific and ecological significance of sensitive plants is well documented and includes such impacts as erosion, clogging streams with sediment, and damaging wetlands. Road-building (and the presence of existing roads) results in soil compaction, increased erosion and runoff, reduced soil permeability to air and water, reduced soil moisture, reduction in soil depth and organic matter, reduction of groundwater recharge, alteration of hydrological flows, reduced nutrient cycling, increase in heat conductivity and a decrease in heat capacity of soil. Passenger vehicles and OHVs are known to spread invasive plants, yet the DEIS fails to address impacts to the habitats of Suemez Island associated with increased motorized vehicle access.

<sup>5</sup> Brown, A.C., and A. McLachlan. 2002. Sandy shore ecosystems and threats facing them: some predictions for the year 2025. *Environmental Conservation*. 29 (1): 62-77.

<sup>6</sup> Viera, M.E.P. 2000. Effects of early season hunter density and human disturbance on elk movement in the White River area, Colorado. Unpublished M.S. Thesis. Fort Collins, CO: Colorado State University.

Wisdom, M.J., H.K. Preisler, N.J. Cimon, and B.K. Johnson. 2004. Effects of off-road recreation on mule deer and elk. *Transactions of the North American wildlife and natural resource conference* 69.

<sup>7</sup> Belnap, J. 2002. Impacts of off-road vehicles on nitrogen cycles in biological soil crusts: resistance in different U.S. deserts. *Journal of Arid Environments*. 52(2): 155-165.

<sup>8</sup> Havlick, David G. 2002. No place distant: roads and motorized recreation on America's Public Lands. Island Press. Washington D.C. 297 pp.

<sup>9</sup> Durbin, T.D., M.R. Smith, R.D. Wilson, S.H. Rhee. 2004. In-use activity measurements for off-road motorcycles and all-terrain vehicles. *Transportation Research Part d Transport and Environment* 9(3): 209-219.

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## B Response to Comments

SCS 92 | **Impacts to subsistence and traditional hunting opportunities:** The DEIS fails to analyze the impacts of increased OHV access on traditional hunting opportunities, although OHVs are known to diminish such opportunities. OHVs are known to displace wildlife and modify wildlife behavior and the noise from motorized vehicles is disruptive to the quiet solitude many hunters seek.

SCS 93 | **Closures and enforcement:** The Forest Service does not have the resources to adequately patrol current OHV use, let alone increased use resulting from new roads and access points. Deterring illegal use and boosting accountability can only be accomplished by augmenting the ranks of law enforcement. Until resources are available to adequately enforce existing regulations and to repair existing resource damage we urge the Forest Service to be conservative when considering opening any new systems roads to OHV use. A network of extensive motorized travel routes, resulting from road-building and the maintenance of existing roads, may also increase improper cross-country OHV use by irresponsible users unless the agency can provide adequate enforcement. As detailed above, motorized use can also fragment and degrade critical wildlife habitat.

The issues discussed above should be considered as "significant" warranting detailed analysis in the final EIS for the Scratchings Timber Sale.

### **This Project Must Comply with the Clean Water Act and Disclose Potential Water Quality Impacts from Violations of State Water Quality Standards**

Section 313(a) of the Clean Water Act provides that all federal agencies "engaged in any activity resulting, or which may result, in the discharge or runoff of pollutants," must comply with the Clean Water Act's requirements, including limits imposed by states through the Act. 33 U.S.C. § 1323(a). The logging and road building activities approved by the Forest Service in this sale will likely violate the standards for turbidity and sediment. As a result, the Forest Service will likely violate the Clean Water Act. In addition, NEPA requires the Forest Service to discuss the likely water quality violations and their impacts in an EIS. The Forest Service has not done this in the DEIS for Scratchings.

The sediment standard for streams classified for water-supply uses is: "No measurable increase in concentration of settleable solids above natural conditions, as measured by the volumetric Imhoff cone method." 18 AAC 70.020(b)(9). The sediment standard for streams classified for growth and propagation of fish does not permit increases more than 5% by weight above natural conditions. *Id.* The Forest Service's own studies show that logging and road building activities violate the sediment standard.

SCS 94 | Since this project will result in violations of the turbidity and sediment standards, the Forest Service is in violation of the Clean Water Act. Moreover, the FSEIS fails to disclose these water quality violations and therefore misleads the decision-maker and the public, in contravention of NEPA.

### **The DEIS Fails to Take A Hard Look At Cumulative Impacts**

- SCS 95 | Nowhere in the DEIS does the Forest Service take a hard look at the effects from past and planned logging to forest resources near, but not on Suemez Island and the users of those resources. Given the extent of logging and road building throughout this portion of the Tongass,
- SCS 96 | the Scratchings Project must also be evaluated in its impacts to regional habitat contiguity, availability of subsistence resources, forest-wide species diversity, and other large-scale concerns. Without such an analysis, the DEIS violates NEPA.
- SCS 97 | The DEIS sections on cumulative impacts are mostly cursory in nature, stating that TLMP standards and guidelines, monitoring and mitigation will redress cumulative impacts. Alternatively, some sections contend that not enough information is known to evaluate cumulative effects.

## Conclusion:

- SCS 98 | For the aforementioned reasons we strongly urge the no further planning occur on the Scratchings project. Should such planning move forward we urge that all units within inventoried roadless areas as well as units in the Delores Watershed be removed from any further consideration.

Thank you for the opportunity to comment on this project.

Sincerely,

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## B Response to Comments

### References

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- Person, D.; Kirchhoff, M.; Van Ballenberghe, V.; Iverson, G.C.; & Grossman, E. (1996).** The Alexander Archipelago Wolf: A Conservation Assessment. PNW-GTR-384.
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The following documents have been provided on a disc in the mailed copy of the our comments:

**PowerDesk Pro 6 - D:\Documents Date: 9/18/2006 Page: 1**

**Name** 02\_121202\_ingie\_grundy\_final\_acmp\_response.doc Harris\_1999\_SE-Ak\_Wind\_Forests\_\_pnw\_gtr244.pdf Juday\_et-al\_1998\_(Complete\_Searchable).pdf Person\_2001\_\_THESIS\_AA-Wolf\_Ecol\_&\_PV.pdf Person\_29Dec05\_1st\_Deer-Multiplier\_Message.txt Person\_29Dec05\_2nd\_Deer-Multiplier\_Message.txt Review\_of\_CSR-Prelim-Draft-Proceedings\_\_ADFG\_15Jun06.pdf ScienceDirect - Geomorphology \_ A comparison of landslide rates following helicopter and conventi.pdf Swanston, 2006, Petersburg Landslide Risk.pdf Swanston, 2006, PSB Ls Risk, color pages.pdf Wolf\_Scientists\_19Sep97\_Letter\_to\_Pendleton(2).pdf Wolf\_Scientists\_to\_Janik\_\_Aug97.txt

## **B Response to Comments**

### **Responses to SCS – Sitka Conservation Society, Corrie Bosman, et al.**

**SCS 1** – Any delay in project planning results in more costs rather than fewer. Most of the expenditures have already occurred starting in 2000 including those that are the most costly such as field data collection, field review and the analysis. As noted in the Issues outside the Scope, the project will be reviewed for consistency with any changes in the Final Forest Plan Amendment once that plan is implemented and adjusted as necessary to be consistent with that decision.

The Tongass National Forest completed a Supplemental Impact Statement (SEIS) in February 2003 that included the analysis of more than 9 million acres of unroaded lands for their suitability for the National Wilderness Preservation System. The 2003 decision of the SEIS was to recommend no further wilderness areas on the Tongass National Forest.

The relevant analysis at the project level looked at the effects of the proposed activities by alternative on the roadless values and characteristics.

**SCS 2** – The market demand is one of the key issues of the Forest Plan Amendment Draft EIS and is covered by that analysis. The discussion in Appendix A has been updated to reflect this new analysis. Market demand is based on more than the historic harvest levels and the components are discussed in the Forest Plan Amendment Draft EIS. See AFA 10.

The error in representing market demand projections from the draft Brooks and Haynes report was in the 1997 Tongass Forest Plan ROD and errata. The 2003 SEIS, and every timber project's Appendix A, "Reasons for Scheduling the Environmental Analysis of the Project Area," have used the correct market demand projections, including the Appendix A. At the project level, an analysis of the financial efficiency of the sale was done in direction by FSH 2409.18.

**SCS 3** – Scratchings project does have alternatives that affect the Roadless Area. Alternative 2 does enter the roadless area with new road construction, and Alternatives 3 and 4 do affect the roadless area but as extensions from the existing road system. Alternatives 1 and 5 do not harvest timber or build roads within the Roadless Area and would be compatible with all the alternatives proposed in the Forest Plan amendment. Please also see Chapter 1, Issues Beyond the Scope of this Final EIS.

**SCS 4** – The 1997 Forest Plan was reviewed in 2005 and is currently in the process of being amended in response to the Ninth Court decision on NRDC v. the Forest Service case. Instead of being 10 years out of date, the analysis on the Forest Plan (Alternative 5 in the Forest Plan Amendment Draft EIS) is current and responds to many of your concerns. The conservation strategy has not been found to be inadequate. Two of the key findings are: 1) the Conservation Strategy is still sound and 2) there is a low risk of species viability problems related to Forest Plan implementation (from the Conservation strategy website <http://tongass-constratreview.net/>).

**SCS 5** – Alternatives were designed by the IDT to provide a reasonable range of management options. An alternative that did not include timber harvest in the Dolores Watershed or in the Suemez Roadless Area (IRA 502) was considered but eliminated from detailed study. Such an alternative would not provide enough timber harvest volume to meet the purpose and need of the project. Additionally, fieldwork and analyses showed that timber harvest could occur in these



areas and meet Forest Plan Standards and Guidelines (see Chapter 2, Alternatives Considered but Eliminated From Detailed Study).

These factors will be considered at the time of the decision along with all other factors by the responsible official.

**SCS 6** - Draft EIS Alternative 4 has been modified to exclude proposed helicopter Units 634-044, 634-045, 634-046, 634-047, and part of 634-005. Alternative 4's economics are improved by the exclusion of these helicopter units.

**SCS 7** - The Purpose and Need (p. 1-4) section of the Scratching project meets the Council on Environmental Quality's (CEQ) guidance found in 40 CFR 1502.13. The Forest Plan and Appendix A of the Scratchings Final EIS will provide additional programmatic information.

**SCS 8** - Appendix A has been updated to reflect to include information on the most current market demand scenarios. Please refer to SCS 2.

**SCS 9** - Based on historic patterns, the Tongass has established a goal for Pool 1 is to be maintained at approximately 4.5 times the amount of the projected harvest to account for projects at various stages of analysis. That goal reflects a number of factors which can lead to a decrease in volume available, such as a decision in Gate 1 to drop further analysis in a particular project area, a falldown in estimated volume between Gate 1 and Gate 2 due to the discovery of more fish streams or more areas of unstable soils that were not apparent in GIS, and volume not available for harvest due to appeals or litigation. The other projects included with the Gate 1 are included on the Schedule of Proposed Actions (SOPA), which is mailed to those who request it and is on the Tongass public website. The 5-year timber sale plan is posted on the Alaska Region public website and shows which projects are being analyzed and those scheduled to be analyzed in the upcoming years.

This volume is a part of the volume under analysis as it has been for the past few years.

**SCS 10** - The methodology used and model limitations of how market demand is calculated is discussed in two reports – Responding to Market Demand for Tongass timber (Morse 2000) and Tongass National Forest Timber Sale Procedures (Morse 2000a) as explained on page A-6. The use of the draft Brackley report in the 2007 calculations is explained in Tongass National Forest Timber Sale Procedures: Using Information about Market Demand to Schedule FY 2006 Timber Offerings (Draft), Alexander 2006.

**SCS 11** – The projections of market demand were not found to be at fault. There was a misinterpretation of the information in the 1997 Forest Plan Record of Decision. The Scratchings project is still part of the timber volume needed at this time. See AFA-10.

The methodology used in the determining the market demand and how the annual timber demand is calculated is included in Scratchings Appendix A and the appropriate references.

**SCS 12** - Forest Service Handbook 2409.18 provides guidance on how to conduct financial efficiency analysis of a proposed timber-sale-harvest-project during NEPA analysis. Public investment costs do not have to be calculated to meet the handbook direction. NEAT was used to conduct the financial efficiency analysis for each alternative in the Scratchings project. Results of the analysis allow the decision maker to compare the relative value of the alternatives. They are presented in Chapter 3, Issue 1. Results are useful for comparative purposes only, actual costs likely will differ.

## **B Response to Comments**

The NEPA Economic Analysis Tool (NEAT) uses costs and selling values to estimate a bid values for each alternative. Timber harvest economics were used to compare alternatives. When the sale appraisals are prepared, prior to the offering of the sale package, more exact information (cruise data and road design) and current selling values would be used. At that time, the sale could be offered to perspective bidders, if it appraises positive. Road costs for the Scratchings project are disclosed on Table 3TR-3.

**SCS 13** – See SCS 12.

**SCS 14** - These comments are part of complaint Case No. J04-0029-CV (RRB). The response to them is included in the defendants' brief located in the project record.

**SCS 15** –Tourism jobs are an important part of the Southeast Alaska economy but a stronger economy is achieved by diversity. Even though the number of jobs in the timber industry has declined, people throughout Southeast Alaska rely on timber harvest from the National Forest for employment opportunities.

**SCS 16** – The Scratchings project area provides only a portion in the regional economy in all aspects – wood products, tourism, guided hunting and fishing, recreation and other uses. Because of the regional nature of the Southeast Alaska economy, this is best analyzed at a much larger scale. Updated analyses of the Economic and Socials Environment and the affected communities are included in the Forest Plan Amendment Draft EIS p. 3-403 to 3-624. The Scratchings project is designed to implement the Forest Plan and the analysis for the Scratchings project tiers to the analyses for the Forest Plan EISs.

Instead of including a Socioeconomics section in the Scratchings Final EIS, discussion of the various economic aspects of each resource are found in the appropriate section. The effects to fish populations and anadromous fish habitat are located in the analysis in the Watersheds and Fisheries section. The Recreation section discusses that recreation use is low on Suemez Island and there is no outfitters/guides that use the Island. Tourism in the surrounding waters is usually in the form of outfitter/guide fishing and wildlife viewing trips. The Recreation analysis concluded that the proposed harvest would have minimal effects on current outfitter/guides because their activities take place in Portage Bay, which is outside the project area (Scott Peak Draft EIS page 3-187). It also concluded that the nature of the current recreation opportunities would remain the same (Scott Peak Draft EIS page 3-188). This conclusion is supported by the Scenery and Wilderness sections of the Draft EIS. The Deferral areas within units have been added to minimize effects to the scenery.

**SCS 17** - The Wildlife, Biodiversity and the Fragmentation sections provide discussion of the environmental impacts. These sections in Chapter 3 include the effects each alternative to the project Management Indicator Species, wildlife habitat including deer, modification of the small Old-growth Reserves, productive old growth and patch size. The amount of analysis is sufficient to compare the effects of the timber harvest on the affected old-growth habitat by alternatives and to compare the alternatives.

**SCS 18** - Your preference for implementing the interagency recommended OGRs is noted.

**SCS 19** - There are emails from S. Brockmann (USFWS January 26, 2006) and Mark Manillo (ADF&G January 27, 2006) concurring with the Interagency Biologists old-growth reserves as presented in the Scratchings Draft EIS for Suemez Island in the project record



**SCS 20** - These variations were discussed and then dropped, usually because they did not meet one or more of the criteria listed in Appendix K.

**SCS 21** - Several variations for the small OGRs were discussed by the interagency team. The interagency old growth reserves in the Draft EIS are the ones agreed upon by the Forest Service and USFWS and ADF&G.

**SCS 22** - Table 3B-2 displays the acreage for VCU 6330 only. The acreage in the final interagency OGR (the numbers in the table) are higher than those listed in the 1999 document. The OGR boundaries were adjusted after 1999 to follow features, which can be found on the ground.

The Interagency Biologists old-growth reserve in VCU 6340 meets both required total acres and POG acres and the acreage difference is the same as in the 1999 document.

In VCU 6350, the acreage shown in table 3B-4 is greater than the original Interagency Biologists Old-growth Reserves recommendations, after the boundaries were adjusted to follow features, which can be located on the ground.

All of VCU 6360 is allocated to the Special Interest Area LUD, a non-development LUD and no Old-growth Reserve is needed (see Forest Plan, Appendix K).

**VCU 6370** This OGR was short in total acres as mapped in the Forest Plan. This VCU requires an OGR of at least 858 acres with 476 acres of POG. As mapped the OGR is 858 acres in size with all 858 acres being POG. This OGR could not be modified to great extent due to the location of the Special Interest Area to the west.

**SCS 23** –The Forest Service uses only the FS acres in a VCU when calculating the required size of an OGR since these are the acres that we manage (Stangl 2007 in project record). The minimum sizes for small Old-growth reserves are located in Appendix 1 of Appendix N of the Forest Plan Final EIS.

**SCS 24** –Marbled murrelets have been observed on Suemez Island and in the saltwater adjacent to the project area. Murrelet surveys have been conducted off shore and on land. A total of 65 marbled murrelets were observed on the water. Land surveys were done as a result of the finding of an eggshell on the forest floor while conducting goshawk surveys in the Bocas Bay area. The eggshell was determined to that of a marbled murrelet. The eggshell was discovered on 4 June 1993 and dawn surveys were done on 15 June 1993. There were approximately 200 murrelet detections that morning. On 14 September 1993 Craig Flatten, wildlife biologist from ADF&G, climbed the tree immediately adjacent to the eggshell location. He noted several potential nest platforms but found no evidence of nesting. He used binoculars to look into other nearby trees while up the original tree. Again, no nests were located. The area of the eggshell and murrelet audio detections is now within the interagency recommended OGR in VCU 635. Forest Plan direction of murrelets requires a 600 foot buffer, generally circular in shape, of forested habitat (if available) around identified marbled murrelet nest sites. Buffer protection may be removed if after two years of surveys the site is determined to be inactive (Forest Plan, 1997, p. 4-117).

**SCS 25** - Wildlife viability is analyzed at the National Forest scale and included in the analysis for the Forest Plan Amendment. The modifications of the small Old-growth Reserves were done in accordance to the Forest Plan direction and meet the Forest Plan criteria. By meeting these criteria, these reserves contribute to the Conservation strategy. The integrity of the



## **B Response to Comments**

Conservation Strategy has recently been reviewed at the Forest-wide scale, which is the appropriate scale.

**SCS 26** - Additional Information on landscape connectivity and wildlife corridors have been added to Chapter 3.

**SCS 27** –Since the scoping document was sent to the public, more field review of the proposed harvest units has occurred on Suemez. As a result of this the units overall have decreased in size. This loss of harvest acreage means that the corridors of standing timber remaining between units have increased. More information on connectivity has been added to the Final EIS.

**SCS 28** - The impacts of the proposed activities on mammals is addressed in the Draft EIS for Scratchings. Please see the response to COOK 3 for more information on small mammals.

**SCS 29** - The Wildlife section now includes more information on small mammals. Please see the response to J. Cook (COOK 3) for more information on the small mammals. While the literature on small mammals seems to indicate that there are small mammals endemic to the temperate rainforest ecosystem, and even to the Prince of Wales Island complex there seems to be no conclusive evidence that any is endemic solely to Suemez Island only.

**SCS 30** – Please see response to COOK 2.

**SCS 31** - The Forest Plan old growth habitat conservation strategy including all species-specific standards and guidelines is considered sufficient to maintain habitat for viable populations for all species within the project area, including small endemic terrestrial mammals.

**SCS 32** - Please see response to COOK 4.

**SCS 33** – Please see response to COOK 4. Marten was not chosen as a project MIS because Suemez Island is not part of an identified high-risk biogeographic province for marten and because of the low amount of trapping that occurs on Suemez Island. Marten are discussed in the Wildlife section of Chapter 3 under the section titled Endemic Mammals.

**SCS 34** - The Draft EIS states that the Sitka-black-tailed deer and Alexander Archipelago wolf were the two project MIS. The Final EIS includes information about the hairy woodpecker, brown creeper and red-breasted sapsucker.

**SCS 35** - The meeting notes say, “Need to verify active goshawk nests and possible sharp shinned hawk nest”. This was in reference to the fact that the 4 known nests needed to be verified as active or not. Subsequent surveys have determined these nests to be inactive. There is no planned activity for the area around the known goshawk nests. The units planned for the southeast portion of the island have all been deferred.

The sharp-shinned hawk nests found on the island have been buffered according to Forest Plan.

**SCS 36** - There has been some reported goshawk activity in the area of Scratchings unit 633-020 but no nest has been found after five visits to the area (Craig Ranger District goshawk data sheets dated August 4, 7, 9, 16 and 20, 2000). An unidentified feather (not believed to be that of a goshawk) was discovered in Unit 634-046 on 7/31/01 (Goshawk Data Sheet, Scratchings Timber Sale). A goshawk feather was found in Unit 637-094 on 7/30/01 (Goshawk Data Sheet, Scratchings Timber Sale). This entire area was revisited in the summer of 2002 with no evidence of goshawks found (Scratchings map, dated 8/15/2002). This unit has been deferred for the Scratchings Timber Sale. An audio was heard in the area of the units in south Santa Cruz in

the summer of 2001 (26 July 2001) and a follow up visit to the area was done in the summer of 2002. A sharp-shinned hawk nest was discovered in this area and the nest has been buffered. Subsequent surveys have found the nest inactive.

There is a possible audio detection on August 20, 2000 near Unit 635-006 and -007. This was detection was very close to the known sharp-shinned hawk nest and it is possible that the audio was a sharp-shinned hawk.

Fieldwork in following years did not result in and more detections of goshawks,

**SCS 37** - All pertinent Forest Plan standards and guidelines will be applied to any goshawk that is discovered.

**SCS 38** - The units not surveyed did not met Northern Goshawk habitat requirements. Surveys occurred during the summer months (between 15 May and 15 August). This information has been added to the Final EIS and the Wildlife Resource report.

**SCS 39** - More information on goshawks has been added to this Final EIS.

**SCS 40** - Many hours were spent surveying for goshawks on Suemez Island. Three sharp-shinned hawk nests were discovered on Suemez Island while conducting goshawk surveys. No other raptors or great blue heron sightings were reported. Any raptor nests that are discovered will have the Forest Plan Standards and Guidelines that protect active rookeries applied.

The sharp-shinned hawk nests received the Forest Plan required buffer until the nest in the vicinity of Units -006 and -007 was visited two consecutive years and determined to be inactive.

**SCS 41** - All field personnel report wildlife observations no matter what resource work they are involved in on that particular day. The owl species were seen while walking out the road at the end of the day. The sharp-shinned hawk nest at Unit -007 was found by the silviculturist and the other one, in the Port Santa Cruz area, by a soil scientist.

**SCS 42** – Please see response to SCS 24. No actual nests were found therefore the buffers were not applied.

**SCS 43** - The justification for using even-aged clearcutting is provided in each individual unit Silvicultural Prescription under the Selected Unit Prescription Section. These prescriptions are located in the project record. A discussion of this justification has been added to the Chapter 3 Timber and Vegetation section.

**SCS 44** – As a federal agency operating under the silvicultural exemption from the 404 permitting process, we follow applicable laws and regulations including Executive Order 11990 and the Code of Federal regulations, which defines actions to be taken to meet the silvicultural exemption. This is clarified in the Final EIS.

The intent of EO 11990 and subsequent regulations is to avoid new construction in wetlands to the extent practicable and when wetlands can not be avoided, to include all practicable measures to minimize harm to wetlands which may result from such use. In making this finding, the head of the agency may take into account economic, environmental, and other pertinent factors.

On the Scratchings Project, wetlands were avoided to the extent practicable while taking into account economic and environmental factors and other pertinent factors including overall project objectives. The Wetlands section in the Final EIS, Chapter 3 explains wetland avoidance for the project area and states that BMPs will be implemented to minimize impacts to wetlands.



## B Response to Comments

Wetland avoidance for individual road segments and measures to minimize effects to wetlands are listed on the road cards. Avoiding wetlands to a greater extent would require an increase in road length and in many cases, building more roads on steeper slopes, with greater environmental consequences.

**SCS 45** - The functions of the wetlands on the project area and the impact of roads and timber harvest on those functions are described in the Affected Environment section of the wetlands section in Chapter 3. Effects of implementation of the alternatives on hydrologic impacts to wetlands are discussed in the wetland direct, indirect and cumulative effects section. Effects of the alternatives on wildlife habitat, rare plant habitat, fisheries, and recreational uses are discussed in those sections of the EIS.

When wetlands are crossed by roads, effects are minimized through the application of the appropriate State approved BMPs and Federal baseline provisions. These BMPs and provisions are incorporated into road designs. BMP monitoring over the past ten years on the forest has consistently found a high rate of BMP implementation (See annual monitoring and evaluation reports for years 1997 through 2005).

Wetland BMP implementation and effectiveness monitoring is conducted on a Forest-wide basis. Best Management Practices concerning wetland identification, evaluation, and protection (BMP 12.5) can be found in FSH 2509.22 10 (USDA Forest Service, Alaska Region, Soil and Water Conservation Handbook).

Road locations within the Scratchings Project Area were designed to avoid wetland areas wherever practicable. However, because of circumstances that would affect other resources, safety, or engineering design constraints, some road locations on wetlands were unavoidable.

**SCS 46** –The narratives of the road cards supply the detail for road construction specifications and efforts to minimize disturbance of wetlands through location and alignment.

**SCS 47** - Combining all the features that are on the Chapter 2, Alternative 1 with the proposed units and roads on the other alternative maps would make the maps illegible.

The level of detail that you mention is found on the unit card maps.

**SCS 48** - To present all the information that you mention on one map would be confusing and hard to understand.

The Roadless Area is shown on the Alternative 1 map. Dolores watershed is delineated on the watershed map in that section in Chapter 3. Trying to put the watershed boundary as a bold line on the alternatives maps resulted in it appearing as an existing road. There is a limit to how much material that can be clearly displayed on each map. Instead, we have provided a table in Issue 2, Chapter 3, which gives the list of proposed units by alternative within the Dolores watershed. Using this table and the alternatives maps will present which proposed activities are associated with this issue.

**SCS 49** - See response to SCS 48.

**SCS 50** - Since the modification of the old-growth reserves would result in a change in Forest Plan LUD allocations, it was decided to show these rather than the Roadless area on the Alternative maps.



**SCS 51** – Changes were made to improve the readability of this map. However, there are limitations with the use of color and patterns. The amount of information on this map is already exceeding the limit that the average reader can absorb.

**SCS 52** - Information that is more relevant has been added to the unit card maps (in the Scratchings Timber Sale project record).

**SCS 53** - Alternative 4 was designed by project Interdisciplinary Team. The areas that are proposed for harvest under this alternative were selected because they posed the lowest risk of affecting the watershed. The other alternatives all meet standards and guides for soil and watershed protection. Alternative 4 has less road construction and fewer acres of timber harvest in Dolores Watershed, to reduce risk to watershed resources and minimize cumulative effects from past management. Alternative 4 has been further modified in the Final EIS to reduce effects to the Dolores Watershed and improve economics.

**SCS 54** – Cumulative effects to Dolores Watershed are stated in Chapter 3 of the Draft EIS.

Chapter 2 of the Final EIS describes monitoring. No watershed-scale monitoring is specifically proposed for Dolores Watershed. BMP implementation monitoring is conducted on a random sample of roads and harvest areas forest-wide; Scratchings Timber Sale activities may or may not be monitored. Forest Plan monitoring cited in the Final EIS Chapter 2 includes stream buffer stability and culvert monitoring in the Scratchings Timber Sale area.

A contract to remove 70 culverts on Suemez Island has recently been awarded and will be implemented in summer 2007. This includes the removal of 11 fish passage barriers. The remaining red pipes will be removed after timber harvest in accordance with the Suemez Island Travel Management Plan.

**SCS 55** – Only areas that have been determined suitable for timber production are being considered for harvest. Areas of steep, unstable slopes were removed from harvest consideration during the planning process. The young growth stands that would regenerate following the harvest activities proposed in this document are expected to be more resistant to windthrow than the old growth stands they replaced.

Future silvicultural treatments may be applied to any young growth stands generated as a result of this document. These treatments are documented in the silvicultural prescription for the stand. In most cases, intermediate treatments such as precommercial thinning are scheduled to occur. These treatments are generally prescribed to increase the value of the future stand in terms of timber production or wildlife habitat. The costs are not calculated at this time since any treatments need to be assessed based on future needs and management direction.

**SCS 56** – The 1997 Forest Plan states that areas with slopes of 72 percent or more are removed from the tentatively suitable land base due to high risk of soil mass movement and accelerated erosion of Class IV channel systems. However, at the project planning level the Forest Supervisor may approve timber harvest on slopes of 72 percent or more on a case-by-case basis, based on the results of an on-site analysis of slope and channel stability and an assessment of potential impacts of accelerated erosion on downslope and downstream fish habitat, other beneficial uses of water, and other resources.

Proposed harvest units with slopes greater than 72 percent gradient were field reviewed by a soil scientist according to Forest Plan standards and guidelines. Approximately 755 acres of unstable areas were avoided. Approximately 44 acres of slopes over 72 percent were found to be

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appropriate for timber harvest due to low risk of erosion. In most cases the slopes greater than 72 percent gradient consist of small cliffs and associated steep slopes with short slope lengths. The unit cards and soils resource report unit reviews describe the locations of these areas. The extent of landslide prone areas within the areas proposed for management activities has been well documented. The amount of proposed timber harvest on slopes greater than 72 percent gradient varies from 26 acres in Alternative 5 to 44 acres in Alternative 2.

Table 3SL-4 in Chapter 3 of the Final EIS displays the acres of timber harvest proposed on slopes greater than 72 percent; these acre estimates were determined in the field. In these units, the project soil scientist has prescribed a number of steps to minimize the risk of landslides. These measures include avoiding the steepest areas, prescribing harvest of one half or fewer of the trees, and requiring full suspension (helicopter) logging. See unit cards for site-specific description of the concerns and the mitigation measures applied. Additional soil information, such as slopes greater than 72 percent and existing landslides have been added to the unit cards in the project record for the Final EIS.

**SCS 57** – The Heritage portion of the Final EIS has been updated to include a more developed discussion of the effects analysis, discussion of the considerable body of Heritage survey that has been conducted, and presentation of the regular site monitoring efforts implemented each year.

**SCS 58** –The scoping process for the Scratchings EIS received comments concerning the economic values of recreation in the proposed timber harvest area. These concerns were addressed in the recreation resource report. No other recreation concerns were raised by the public during initial scoping for this project.

Recreation carrying capacity for Suemez Island has not been analyzed to date. A carrying capacity analysis for all of Prince of Wales Island has been initiated as part of a needs assessment for outfitter and guide use in wilderness areas. Although this carrying capacity analysis is looking at Prince of Wales holistically, it is not likely to concentrate on Suemez Island for two reasons: 1) there is no evidence of recreation related impacts or conflicts and 2) there are no outfitters and guides using Suemez Island. Therefore, a carrying capacity analysis for Suemez Island is not warranted since Suemez Island does not receive extensive recreation use and little or no ecological or social impacts have been observed or reported.

The carrying capacity concept for recreation has been incorporated into the management of wilderness areas, national parks and special recreation areas that receive high levels of use, have evidence of recreation related impacts and/or conflicts between users or user groups (Manning, 2001). In these areas, management objectives for the area are outlined in legislation and landowner policy, but narrower more site-specific guidance and management may be required to protect the resource and the visitor experience. The objectives for recreation management on Suemez Island, based on the Land Use Designations (LUD), are as follows: Timber Harvest and Modified Landscape LUD→ 150 overnight guests at an overnight facility, 1000 guests at a day use facility, flightseeing, facility development and trails are all appropriate recreation uses in these areas. All of the proposed timber harvest and road development would occur in these LUDs or in the Old Growth Reserve LUD, which allows for 24 overnight visitors, 50 visitors to a day use sight at one time, and development of most recreation facilities except campgrounds (Forest Plan 1997, pg. 4-40). Hence, since the current recreation use, estimated at fewer than 200 people in the last five years (approximately 12 visitors were observed by Forest Service



employees in 2005) far from exceeds the objectives for the LUD, there is no reason to analyze the capacity or limit use, or types of use.

Concern was raised about the displacement of non-motorized recreation users on Suemez Island. Since most of this activity is within the Special Interest Area LUD, where the caves and much of the scenic areas may be encountered, it is not anticipated that conflicts between motorized and non-motorized recreation users will occur. Displacement of visitors as a result of increased road density is not likely, due first of all to the small numbers of users of any type since the road system is not connected to a community, and secondly, because the LUD management direction provides for a diversity of recreation opportunities on Suemez Island. Visitors would continue to be able to visit the Special Interest Area on southern end of Suemez Island and be away from roads and development. On the other hand, most of the observed recreation use of Suemez Island is roaded recreation. Visitors come to ride OHVs, hunt from the road system, walk on the secluded roads or ride bicycles on the roads. Few visitors have been encountered off the road system or outside the bays.

**SCS 59** – There is not 20 miles of road constructed within the roadless area for any alternative. Alternative 2 has the most amount of road (3.4 miles of system road) constructed within the roadless area. Alternative 3 would construct 1 mile and Alternatives 4 and 5 would not construct road within the Roadless Area. Issue 3 in Chapter 3 describes that the areas most used for solitude and primitive recreation are at the southern end of the island and accessible by boat or plane. The unique characteristics and values of this Roadless Area 502, such as cultural sites, geological formations and open sandy beaches, exist within the Special Interest Area LUD in the southern portion of the island, where timber harvest activities are not proposed. The areas accessed by the road system are more likely to be used for roaded recreation. The unique values of the Roadless Area 502 would remain intact.

**SCS 60** –The Recreation Opportunity Spectrum (ROS) of several acres would change as a result of the proposed timber harvest activities. If the Forest Plan LUD allows for increased development, timber harvest or increased recreation use, then the descriptive ROS character may change to show the new development. Since development is allowed on some areas of Suemez Island, based on the LUDs, a change in recreation opportunity is allowed. Based on observations of recreation on Suemez Island and the lack of documented user conflicts, a change in the ROS for a portion of the island is not likely to affect greatly the recreation users. See also response to SCS 58.

**SCS 61** – Please see response to SCS 58.

**SCS 62** - See silviculture response for information on wind disturbance. All of the action alternatives maintain habitat capable of providing for the 18 deer/mile<sup>2</sup> threshold. Our calculations indicate that currently Suemez Island is capable of supporting an estimated 39 deer/mile<sup>2</sup>. As a result of the proposed project, this number is estimated to decline to 37 deer/mile<sup>2</sup>.

When the deer model was run for the Forest Plan, several caveats were listed on pages 3-371 through 3-379. They were:

FORPLAN solutions are specific to VCUs that were split by ADF&G WAA boundaries were assigned to the WAA that contained the majority of the acreage. Examples of split VCUs



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include Rock Pass, Wrangell Narrows and Tuxekan Island. Numbers in this table should be viewed as approximations and are intended for alternative comparison only.

This analysis includes only National Forest Lands. Habitat capability from State and private lands are not included.

Some WAAs with naturally very low deer densities have been omitted (e.g. 4302-4607).

As identified in ADF&G August 26, 1996, letter. These VCUs tend to be associated with planned timber sales and may not necessarily represent all “high Use” deer hunting areas where timber sales are not planned (e.g. Angoon and Juneau areas).

This analysis assumes: 1) maximum timber harvest levels over the 100 year period, 2) at 2095 25 percent of the 2<sup>nd</sup> growth would be <25 years old and 3) at 2095 60 percent of the 1995 available old growth would be harvested in alternatives with a 200 year rotation.

Furthermore, in the Appendices to ‘Appendix N’ of FEIS TLMP Revision, Chris Iverson made similar caveats in the footnotes. In Appendix 12 – Deer Capability he stated in the heading: “Rough estimates of deer habitat capability densities in 1995 and 2095 by WAA. Densities are shown for combined federal and non-federal lands that are less than 1500 feet in elevation represent deer winter range. Densities represent deer habitat capability from federal only lands and conservatively assume no deer production from non-federal lands.”

The Forest Plan ran the deer model on the hexagon database while we run the deer model on the polygon database at the project level. The hexagon was 20.66 acres in size and they were systematically layered over the forest. The center point of the hexagon gave the entire hexagon its value. (For example if the center point landed on volume class 7 then the entire 20+ acres was given that value, consequently, if the center point landed on an enclosed 3 acre muskeg then the entire hexagon was given the muskeg value.) This works well at the Forest Level of 17 million acres but is dubious in a small area.

Periodically habitat calls are changed at the project level because of much better information from on the ground knowledge. With all these caveats, there are bound to be differences in the amount of habitat depicted in the project specific documents when compared to the Forest Plan outputs.

The deer model gives recent clearcuts a higher value to deer than older young-growth, because of forage availability for a set number of years. After that timeframe, the value of the clearcuts drops to zero. In rerunning the deer model in 2007, we actually got higher deer numbers than before. This is due to the fact the acreage of private land was not figured into the calculations in 2007.

**SCS 63** - We used 100 deer and no predation for the model and a high HSI of 1.0. The deer model gives clearcuts a high value to deer, because of forage availability for a set number of years. After that timeframe, the value of the clearcuts drops to zero. In rerunning the deer model in 2007, we actually got higher deer numbers than before due to the adjustments in the units.

The Forest Plan did use 1.3 HSI to indicate that high value habitat occurring on south facing slopes, in low snow areas, below 800 feet in High POG areas (125 deer that the habitat can theoretically support). In areas that had wolves, a 36 percent reduction was used to try to account for the over-estimation you stated. After further work by ADF&G, we agreed to use 100 deer equal to 1.0 HSI and no correction factor. Following Forest Supervisor direction (Cole

2005) we now use the 100 deer equal to 1.0 and take an additional 30 percent reduction which more than accounts for the effects of predation. We use this only if we use the model for subsistence purposes where wolves are present to calculate how many deer are available for human hunters.

**SCS 64** – The 1997 Forest Plan went from using volume strata rather than TimTyp. The relationship between volume strata and volume classes is discussed in the Timber and Vegetation section in Chapter 3. VOLSTRATA is statistically valid and Timtyp is not. Our current direction is to use the 1997 model, not the Suring. We are not required to use the deer model in a project analysis. However, if we do use the model we use the most current version, use an interdisciplinary approach and identify important deer winter range as part of the analysis (Forest Plan, Page 4-113; USDA Forest Service 1997 Page 3-17 R10-MB-338a; Cole 2005).

Doerr et al. 2005 is a peer-reviewed document from the Journal of Wildlife Management, which, along with Caouette and DeGayner (2004) from the Landscape and Urban Planning Journal, is considered the newest and best available science when discussing this topic.

Caouette et al. (2000) provided a statistically valid approach for use in determining volume through the strata approach. Caouette et al. (2000) went further and stated: “Timber volume information and associated maps have been widely used in the Tongass National Forest for land-use planning and timber and wildlife management. Although considerable effort has been expended to improve timber volume maps, little has been done to evaluate the suitability of timber volume as a descriptor of forest character. We established a rough indicator of forest structure that uses trees per acre and quadratic mean diameter to examine the relation between timber volume and forest structure. Results indicated that timber volume and forest structure are not interchangeable attributes. Results also indicated that the original photo-interpreted timber volume stratification did not always capture differences in timber volume but may have captured differences in forest structure. The recently revised timber volume stratification provides more reliable timber volume information, but it sacrifices structural information in the process.”

**SCS 65** - The deer/wolf model you describe has not completed a peer review process. The Person model to which you refer is a PhD dissertation. Current Tongass National Forest direction is to use the deer model to estimate the theoretical number of deer the project area can support to determine if the action alternatives will meet the 18 deer per square mile guideline to maintain sufficient animals for wolves and hunters (Person et al. 1997, Puchlerz 2002 and Cole 2005). This is more properly addressed at the Forest level. Please also see Chapter 1, Issues Beyond the Scope of this Final EIS.

Every 150 to 300 years a major wind event occurs across the Tongass National Forest. These events usually occur following a large rain on snow event when a southeast storm hits this archipelago (Kramer et al. 2001). The last one of consequence occurred about 120 years ago.

**SCS 66** - The Forest Service uses the Wildlife Analysis Area (WAA) or multiple WAAs associated with the project area to assess the effects of deer habitat capability on wolves (Forest Plan, p. 4-116). The use of the deer model at the project-scale was identified as a concern (Item 04-7) identified in the Forest Plan 5-year review and is being further refined. For Scratchings project, both WAA 901 and the Biogeographic Province were used.

Most of the land in the southern outer island biogeographic province is in non-development LUDs. The biogeographic province that Suemez Island is in also includes Heceta, Lulu, Baker,



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Noyes, San Fernando, St. Johns, Coronation, Warren and the Murielle Islands. WAA 901 includes all of Suemez Island; WAA 902 is Lulu, Baker, Noyes and St. Johns and San Fernando Islands. WAA 1003 is Heceta Island, Warren Island is WAA 1524 and Coronation Island is WAA 5015. The only islands that have had any kind of harvest activity occur on them are Suemez and Heceta.

### Deer Densities for Biogeographic Province by WAA

WAA	1954	1995	% change from 1954	2095 deer/sq. mi	% change from 1954	Total area square miles
	deer/sq. mi					
901	40	37	-7%	37	-8%*	58 mi <sup>2</sup>
902	29	29	0	29	0	163 mi <sup>2</sup>
1003	48	35	-27%	24	-50%	68 mi <sup>2</sup>
1524	57	57	0	57	0	16 mi <sup>2</sup>
5015	51	51	0	51	0	29 mi <sup>2</sup>

\* The Scratchings project results in about a 1% decline in the overall deer numbers.

**SCS 67** - More information about the deer model is now included in the Final EIS and in response to the above comments.

The deer model discloses the amount of habitat in each quartile for the 1954 historic condition, the present condition, and the predicted reduction as a result of each alternative. The Forest Plan used the quartile method to discuss high value deer winter range (Forest Plan Final EIS Part 1, page 3-369 and footnote 1 page 3-376). The Forest Plan defined the highest 25 percent (4<sup>th</sup> quartile) as high-value deer winter range.

The method of breaking the acres of deer habitat into quarters is simply another way to show the distribution of deer habitat within the area being analyzed so that the effects of the alternatives can be compared. In order to create the maps, the model must be run. The table merely shows the different HSI values used in the model. The factors that determine an area's HSI value are volume, aspect, elevation, and average-winter snow depth. The model is run to produce the maps.

The Forest Plan on page 3-367 discusses how the modeling process occurred: As part of the Forest Plan process, a panel of experts was convened to make recommendations on all wildlife analyses. The wildlife specialist for the Forest Plan designed a new HSI model for use in these analyses. The panel of experts made changes to this model to reflect new information better. The new model (DeGayner 1996) was presented to the Interagency Deer Habitat Workshop where representatives of the Fish and Wildlife Service, Alaska Department of Fish and Game and other Forest Service Biologists. This workshop reviewed all aspects of the deer model presented in the RSDEIS of the Forest Plan and adjusted the model coefficients so that model outputs better represented information from independent data sets such as deer harvest levels and deer pellet group transects. The participants increased the influence of predators on habitat scores, lowered the habitat values of second growth and increased the maximum carrying capacity estimates. The Forest Plan used a 36 percent reduction in the modeled deer numbers whenever wolves were



present. ADF&G (Person et al. 1997) requested that the Forest Service use 100 deer per mi<sup>2</sup> for the best deer habitat instead of the 125 deer per mi<sup>2</sup> predicted in the model runs. ADF&G also requested that the Forest Service not apply the 36 percent reduction to that figure. This was first discussed in the 2000 Tongass National Forest Annual Monitoring and Evaluation Report released in April 2001. On page 2-155 under recommended changes (amendments) to the Forest Plan analyses or monitoring section, the following was presented:

- Adopt 100 deer per square mile for habitat scores of 1.0, unless project-level data suggest otherwise.
- Use 18 deer per square mile as a guideline for the minimum carrying capacity to support hunting and wolves.
- Do not apply the wolf-induced 36 percent reduction to deer habitat scores when estimating deer available to wolves.

On May 25, 2005, Tongass Forest Supervisor Forrest Cole gave direction to:

- run the interagency deer model,
- following the procedures outlined on page 2-155 in the Annual Monitoring & Evaluation Report for FY 2000 and Attachment 1, page 1 of the MOU between the State of Alaska and USDA Forest Service on Coastal Zone Management Act/Alaska Coastal Management Program – Consistency Reviews.

He also directed that interdisciplinary teams to address any project specific interagency input in the wildlife resource report.

The Memorandum of Understanding (MOU) referred to here is an agreement between the Forest Service and the State of Alaska that includes information needed by State agencies in order to conduct the coastal zone consistency reviews. The MOU requires the Forest Service to provide (along with many other pieces of information) maps displaying “(a)ll deer winter range in project area (that scores above 0 in most recent interagency approved version of deer HSI model) distinguished by quartile (i.e. by 25% of acres).”

The Forest Service did not “unilaterally expand the range of the deer model’s HSI table (from HSI scores of between zero and 1.0 to scores of zero to 1.3)”. Through cooperation with agency partners (ADFG and USFWS), the Forest Service amended the model. This modification was designed by Gene DeGayner and adjusted through the interagency process at the Interagency Habitat Workshop (DeGayner 1996). According to the Forest Plan, “The maximum carrying capacity was estimated by reviewing ADF&G deer density data (ADF&G unpublished data) and nutritionally-based estimates ranging from 70 to 185 deer per square mile (Kirchhoff, ADF&G memo 11/27/96).”

The 1997 model was indeed reviewed by interagency biologists. The documentation (DeGayner 1996) is in the planning record for the Forest Plan EIS.

The wildlife models used on the Tongass National Forest were designed to address effects of proposed activities, not animal numbers (DeGayner 1992), in order to compare alternatives. Starfield and Bleloch describe why we model: “A model is any representation or abstraction of a system or process. We build models because they help us to (1) define our problems, (2) organize our thoughts, (3) understand our data, (4) communicate and test that understanding, and (5) make predictions. A model is therefore an intellectual tool (Starfield and Bleloch 1991 p.1).”

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The term “worst-case scenario” is intended to describe the amount of deer habitat that would be harvested if all harvest units were clearcut. In some partial harvest units, the effects to deer may be less than that predicted by the model. The model is a very simple device to help us make decisions in a complex world. Additionally, we use the information we gathered while in the project area to augment the model outputs. State and Federal agencies have requested the model runs so they can better analyze our information. They understand the shortcomings of the models and accept them for what they are and what they predict. The deer model results are useful for comparing alternatives.

**SCS 68** - The deer model used for the Scratchings project is the one that we are directed to use by the Forest Plan. See pages 3-365 thru 3-368 of the Forest Plan. Also, please see response to SCS 67.

**SCS 69** - The deer-habitat-capability-model incorporates the effects of varying winter snow levels by assigning lower habitat suitability indices to areas with higher average-winter-snow-depths. Sitka black-tailed deer in Southeast Alaska accumulate fat deposits from the food they eat all summer. These deposits are normally sufficient to maintain the animal through the winter months. They will eat to augment their energy use but do not add to their fat deposits. During very cold periods, they reduce their movements and thus reduce their nutritional needs. The spring “green-up” is very important to deer. Without this green-up, the deer are in jeopardy because they are at the end of their fat reserves. If the green-up does not occur in time, deer may starve. In the late 1960s to early 1970s, a series of cold winters allowed for higher than normal accumulations of snow that was late in melting causing deer to starve.

This occurred in 1972 when the snow level was still six feet deep at the shoreline in May. By June, the snow was still four feet deep in interior valleys. Deer were “yarded-up” (living in a small area much like livestock in a fenced enclosure) and they were extremely vulnerable to predation by wolves even though the forest on Suemez Island was virtually intact in 1972. Wolves were able to move across the crusted snow while the deer were not. Such an occurrence can be expected to occur somewhere on the Tongass every 20 to 40 years, given past experience.

There is some uncertainty in predicting weather patterns in the Alexander Archipelago. If a similar weather pattern to 1972 occurs again, it will likely cause similar die-offs. In the event of another severe, persistent, deep snow year, there may be deer die-offs in both harvested and unharvested stands of timber. Some deer may be lost, but viable populations will be maintained across the Tongass National Forest, as projected in the Forest Plan EIS.

Additionally, the Forest Service projects that in Wildlife Analysis Areas with greater than 18 deer per square mile (Person et al. 1996, Person et al. 1997, Person 2001), there will be enough deer to keep a healthy wolf population and provide sufficient numbers of deer for human consumption. The Forest Service uses the deer model (DeGayner 2001) to make these predictions (DeGayner 1995, Cole 2005). The Scratchings Project Area EIS is tiered to all relevant analysis in the Forest Plan, as noted on page 1-3 of the EIS.

**SCS 70** – A discussion of wind disturbance can be found in Chapter 3 of the EIS Environment and Effects, Timber and Vegetation Section under Forest Health and Natural Disturbance. This section has been broadened to address your concerns.

**SCS 71** – As requested, map of potential windthrow risk for the project area has been developed in response to your comment. This shows an estimated wind risk ratings for each timber stand



within the project area. The GIS coverage and map are available in the project record along with documentation on the process used to develop the ratings.

An analysis of the effect timber harvest under each action alternative might have on wind risk has been provided in the Final EIS Chapter 3 Environment and Effects, Timber and Vegetation Section under Effects of the Alternatives.

The influence of wind disturbance on the project area has already been considered extensively for the project as discussed in the Draft EIS. Each individual unit harvest prescription addresses this concern. Areas requiring protection from windthrow for other resources (such as stream buffers for fisheries) as well as any areas of timber adjacent to proposed harvest boundaries where windthrow is expected to be a concern has been proposed for additional protection. The places where Reasonable Assurance of Windfirm (RAW) buffers are determined to be needed and the actual RAW buffer prescriptions will be based on observations of how past harvest edges in similar stands on Suemez Island are affected by wind and how those stand edges stabilized over time. RAW buffers will be designed to stabilize exposed stand edges as soon as possible after harvest.

**SCS 72** - Please see response to SCS 71. This information was developed from “on the ground knowledge” and aerial photo interpretation of naturally occurring stand structures in the project area. A discussion of this analysis regarding limitations and the methodology used in its development can be found in the project record.

The discussion addresses the interaction of proposed timber harvest with the effects climate change might have on the project area in the context of the proportion of timber stands planned for harvest by alternative that might be expected to survive a large-scale storm event. This assumes, as you imply in your comment that climate change will result in significantly more windthrow risk particularly in areas that currently are at risk.

The influence of wind disturbance on the project area has been considered extensively for the project. Each individual unit harvest prescription addresses this concern. Areas requiring protection from windthrow for other resources (such as stream buffers for fisheries) as well as any areas of timber adjacent to proposed harvest boundaries where windthrow is expected to be a concern has been proposed for additional protection. The places where Reasonable Assurance of Windfirm (RAW) buffers are determined to be needed and the actual RAW buffer prescriptions that will be implemented will be based on observations of how past harvest edges in similar stands on Suemez Island are affected by wind and how those stand edges stabilized over time. RAW buffers will be designed to stabilize exposed stand edges as soon as possible after harvest.

**SCS 73** - Please see the reference section, Chapter 4 and in the project record, for a list of documents cited concerning wind disturbance and stand structure development following windthrow.

The project unit prescriptions, buffers and best management practices are based on the professional experiences of the specialists on the Interdisciplinary Team. This experience is based on training, research, practical work and observations from within the project area over time. Given the variability and changes in Nature, it is not practicable to guarantee that future large scale wind damage will not occur in the project area under any of the proposed alternatives, including the no action alternative.



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**SCS 74** – Please see response to SCS 73. The Final EIS includes consideration of the risks associated with windthrow. The Forest Supervisor has considered these risks in his decision on this project.

**SCS 75** – The Forest Plan does not provide any direction or guidance for designing a RAW zone or determining if standing timber would be needed in a RAW zone. The plan did state that implementers should pay special attention to the area within one site-potential site tree height of the Riparian Management Area (RMA). In 2006, there was additional direction on the application and monitoring of RAW buffers in the working paper “Reasonable Assurance of Windfirmness Guidelines” Version 1.0, which will be used as guidance when the RAW buffers are reviewed during layout.

**SCS 76** – Forest Plan LUDs define where timber management can occur in the project area. We agree that scheduling harvest within these LUDs, as Harris recommends, would be a good approach to overall timber management of the project area to reduce windthrow potential. Two previous timber sales have occurred in the project area. This fact, combined with the overall reduction in available and suitable areas to implement suitable and economic timber sales, per the current Forest Plan, causes us to work in areas that have already been heavily harvested. The fact that mandatory protections for other resources often guide the design of harvest units, adding protections that are generally not known until field review is undertaken during a planning process makes it difficult to schedule harvests as Harris proposes.

**SCS 77** – Under the section titled “Guides for Reducing Wind Damage”, Harris points out factors that need to be considered when determining windthrow risk. Elevation was one of a combination of factors. The assessment of windthrow risk provided in the Unit prescription for each proposed harvest area is based upon a number of factors. The dominant factor considered is exposure to southeast storm winds. The context that elevation is used in the prescription and unit card is primarily for describing a general zone within the proposed harvest area. When Harris talks about risk being higher at lower elevations, he is referring to elevation in the context of the entire hillslope. In the unit card and prescription, we are referring to elevation changes in the context of the proposed harvest unit not necessarily the entire hill slope.

In the passage cited above, Harris qualifies the findings that the highest rate of blowdown occurred below 200 feet elevation with additional information about other factors affecting tree stability at that elevation. These factors should be considered. “Comparison of blowdown with distribution of productive forest land showed that the highest rate of blowdown (2.86 percent) occurred below 200 feet in elevation. This high rate could be because stands at low elevations tend to be taller and denser than stands at high elevations. Rooting depth may also be limited by high water tables on flat areas, which occur more frequently at low elevations”

**SCS 78** – The size and configuration of the RAW buffer will be determined during unit layout by an interdisciplinary team of specialists. Additionally, stand edges created by timber harvest believed to be at risk for windthrow after harvest will also be reviewed to determine if a windfirming prescription for that edge is warranted. The marking guidelines will be developed at that time based on the recommendations of the IDT.

**SCS 79** – The effects section has been broadened to address your comment. Please see Chapter 3 Environment and Effects, Timber and Vegetation Section under Effects of the Alternatives.

**SCS 80** – Generally, aphid numbers only build up during repeated years with mild winter and spring temperatures and mortality tends to occur only after a number of years of high aphid numbers (Insects and Diseases of Alaska Forests R10-TP-87 p.55-56). Due to the nature of spruce aphid infestations, it is unlikely that all of the spruce along the coast of Suemez Island could die as a result of aphid activity. The full extent of spruce mortality, because of aphid activity, is not known but from observation, spruce mortality does not appear to be, nor is it expected to be of major significance. Cool temperatures during the spring of 2006 appeared to have reduced aphid numbers to a point that noticeable defoliation is no longer occurring.

**SCS 81** - More information has been added to the Final EIS.

**SCS 82** – Wind disturbance was discussed in the Draft EIS and taken into account with the selection of proposed units and unit design. The need for RAW buffers along fish streams was indicated on the Draft EIS unit cards. More information has been added to the Final EIS based on subsequent field review. Measures to minimize the probability of blowdown have been applied where risk indicates need,

Currently, not enough blowdown timber is present to necessitate a salvage sale.

**SCS 83** - Please see response to SCS 59 and SCS 1

**SCS 84** – Please see response to SCS 59 and SCS 1.

**SCS 85** – No decision has been made to enter the Roadless Area at this time. Alternative 1 or Alternative 5 could be selected or a modification of one of the other alternatives to avoid the roadless area could be selected.

**SCS 86** – Please see response to SCS 1 through SCS 4.

**SCS 87** – Please see response to SCS 1.

**SCS 88** – OHV access would decrease with Alternatives 2 through 5 after project completion because of changes in road management in these alternatives. The Road Management Objectives in the project record for the Final EIS represent the road management plan for the area. All newly constructed roads will be put into storage or decommissioned. Temporary roads are decommissioned after use. On the existing road system, the area travel management plan stores about 11 miles of road, which leaves about 4 miles of stored road available to OHV use. About two miles of road will be decommissioned and about 10 miles will be maintained open at maintenance level 2. Prior to designating roads as suitable for mixed traffic between OHVs and other traffic, an engineering study to determine the suitability of the roads for this designation will be conducted. The potential miles open to OHV use is 14 miles.

**SCS 89** – OHV use is generally limited to roads in Southeast Alaska due to the heavy underbrush, broken terrain, and wet soils. Due to the current low level of OHV use on Suemez and the fact that the overall road miles are going to be less after the proposed project, we do not expect other resources to be impacted by an increase in OHV use. There may be a minimal temporary increase in OHV use by hunters during the life of the project due to the fact that there will temporarily be more roads available and also the presence of the floating camp in the area that would increase the number of people using the island's road system although additional vehicles would be limited. The road system on Suemez Island is not connected to any other road system. See also SCS 88



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**SCS 90** – We agree that the presence of OHVs can be disruptive to wildlife; however, the use of these vehicles on Suemez is minimal even during hunting season (the peak time of use). The disruptive nature of the OHVs is temporary in nature and does not result in extended disturbance. OHV use on Suemez has not been observed to occur anywhere but on the existing road system. See also response to SCS 88.

**SCS 91** – With the implementation of Alternatives 2 through 5, motorized access will decrease. For Alternative 1, the motorized access will remain the same.

**SCS 92** - We agree that the presence of OHVs can be disruptive to wildlife; however, the use of these vehicles on Suemez is minimal even during hunting season (the peak time of use). The disruptive nature of the OHVs tends to be temporary in nature and once the vehicle is past, things return more or less to normal. OHV use on Suemez has not been observed to occur anywhere but on the exiting road system. See also response to SCS 88.

**SCS 93** - The network of roads on Suemez Island and the Scratchings Timber Sale are not connected to any community by road nor has any public access. The only method of getting OHV to the island is by barge or boat. Anticipated use of the designated motorized routes is expected to be a relatively small number of hunters during a short time period of each year. The motorized travel routes were designated for use after consideration of public comments. Present law enforcement capabilities will be adequate to enforce the existing regulations for the anticipated use. Prior to designating roads as suitable for mixed traffic between OHVs and other traffic, an engineering study to determine the suitability of the roads for this designation will be conducted. OHV use on stored roads may require construction of suitable stream crossings and other measures to protect resources. The potential miles open to OHV use is 14 miles.

**SCS 94** - The Final EIS concludes that BMP implementation is expected to maintain water quality within standards established by the State of Alaska. The cited USFS reports (Paustian 1987 and the 2004 M&E report) do not conclude that water quality standards were violated. We have not received any notice of violation of water quality standards from the State of Alaska. In their memo of September 7, 2006 (published in this appendix), the State concurred with the “water quality and fisheries aspects” of the Scratchings Draft EIS. Neither the State, nor the EPA, in their comment letter on this Draft EIS (published in this appendix), questioned the efficacy of the BMPs described in the Draft EIS.

The Final EIS concludes that water quality effects will be temporary and localized, will be minimized by the application of BMPs (shown site-specifically in unit and road cards in the ROD), and will not impair existing or designated uses. Forest-wide BMP implementation monitoring results indicate a high rate of successful BMP implementation.

**SCS 95** - See SCS 16. The Forest Plan Amendment Draft EIS has analyzed specifically what you have requested at not only the Forest-wide scale but at the biogeographic provinces and ecological subsections.

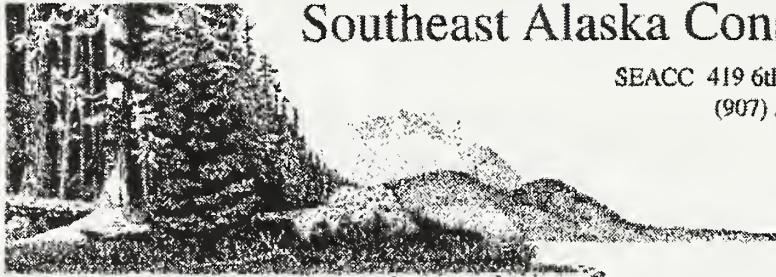
**SCS 96** - Please see response to SCS 995.

**SCS 97** - Table 3-1 has been created to make actions included in cumulative effects analyses more apparent. Cumulative effects are analyzed by each resource in Chapter 3.



**SCS 98** – Please see responses to SCS 5 and SCS 83. Consideration will be given to avoiding the roadless area and the Dolores Watershed in the decision for this project as well as all other factors and resources.

## B Response to Comments



### Southeast Alaska Conservation Council

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September 18, 2006

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Planning Staff  
Thorne Bay / Craig Ranger Districts  
ATTN: Scratchings Timber Sale Project

The following comments are submitted by the Southeast Alaska Conservation Council (SEACC) on the Scratchings Timber Sale Draft Environmental Impact Statement (DEIS). The proposed action for the Scratchings project is to log approximately 42 million board feet (mmbf) of old-growth timber and construct 13 miles of new, permanent roads, 6 miles of temporary roads, and to reconstruct 20 miles of existing road.

SEACC is a coalition of eighteen volunteer citizen conservation groups in fourteen communities across Southeast Alaska, from Ketchikan to Yakutat. Our individual members include commercial and sport fishermen, Alaska Natives, tourism and recreation business owners, small-scale high-value added wood product manufacturers, hunters and guides, and Southeast Alaskans from all walks of life. We are dedicated to safeguarding the integrity of Southeast Alaska's unsurpassed natural environment while providing for the sustainable use of our region's resources.

#### Maps Provided in Scratchings DEIS are Inadequate

There are significant shortcomings with the maps provided in the Draft Environmental Impact Statement (DEIS). Accurate maps are critical to the public's ability to weigh the costs and benefits of a timber project. The Forest Service's hope that the public and others will provide meaningful and site-specific comments is meaningless if the agency does not provide the public with the means to do so.

Problems with the Alternative Maps (Figures 2-1 through 2-5) in Volume 1 include:

SEACC 1 | All the action alternatives proposed will modify the current conditions on Suemez Island. It is difficult for the public to assess those changes if they are not presented in one map that shows both the current conditions as well as the anticipated future condition. Such a map would combine the features of the Alternative 1 map with the features from the action alternative in question. These maps, one for each action alternative, would thus present the public with a clearer understanding of the anticipated future condition of the island.

ALASKA SOCIETY OF AMERICAN FOREST DWELLERS, Point Baker • ALASKANS FOR JUNEAU • CHICHAGOF CONSERVATION COUNCIL, Tenakee  
• FRIENDS OF BERNERS BAY, Juneau • FRIENDS OF GLACIER BAY, Gustavus • JUNEAU AUDUBON SOCIETY • JUNEAU GROUP SIBIRIA CLUB • LOWER CATHAM  
CONSERVATION SOCIETY, Fort Alexander • LYNN CANAL CONSERVATION, Haines • NARROWS CONSERVATION COALITION, Petersburg • LISIANSKI INLET RESOURCE  
COUNCIL, Pelee • PRINCE OF WALES CONSERVATION LEAGUE, Craig • SITKA CONSERVATION SOCIETY • TONGASS CONSERVATION SOCIETY, Ketchikan • TAKU  
CONSERVATION SOCIETY, Juneau • WRANGELL RESOURCE COUNCIL • YAKUTAT RESOURCE CONSERVATION COUNCIL.

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These maps would allow the public to better weigh the pros and cons of logging significant amounts of Alaskan old-growth from an island already heavily impacted by past logging operations. For example, the impacts of logging units 635-012 – 635-016 (an area of approximately 137 acres containing approximately 4.5 mmbf of timber) on wildlife connectivity would be better understood if the existing clearcuts in the area, combined with the anticipated clearcuts, were displayed in a single map. This map would better present the anticipated future condition of the area should the action alternative in question be selected by the Forest Service.

**SEACC 2** | The same is true for anticipated cumulative impacts to fisheries, roadless areas, visual integrity, remaining Productive Forest Condition Classes, deer winter range, the area's ability to contribute to future needs for timber, and other important trends. Although some of this information is available throughout the document, having it presented in one map will greatly increase the public's ability to meaningfully comment on proposed Forest Service actions.

Of particular concern to this project are the impacts to the Dolores Watershed and to the mapped roadless area, Suemez Inventoried Roadless Area (IRA). These are identified as two of the three Significant Issues raised by the public during the scoping process (DEIS at 1-16).

**SEACC 3** | The Dolores Watershed contains important fish habitat. It is an area of steep slopes, extreme wind, and previous logging. The area is only slowly recovering from the "long term impacts to stream and fish habitat," and conifer regeneration "remains minimal" in much of the area (DEIS at 3-99). Including a dark line denoting the Dolores Watershed on each action alternative map would enhance the public's ability to weigh the costs and benefits of additional logging in an area that has already been heavily impacted by previous logging.

**SEACC 4** | Likewise, the Suemez IRA is noted for a variety of non-timber uses. The area possesses outstanding wildlife, fisheries, hunting, subsistence, cultural, and tourism values that merit protection from development. There is local and national support for managing this roadless area in an unroaded condition (TLMP SEIS App C at 2-300). Denoting this area on each action alternative map would greatly increase the public's ability to judge whether building new infrastructure and clearcutting hundreds of acres in such a diverse and productive area is in the public's best long-term interest.

**SEACC 5** | Lastly, the coloring on the Alternative 1 map (figure 2-1) is difficult to differentiate. The agency could greatly increase the usability of the map by demarking VCU boundaries in a bright color, such as red. Likewise, the roadless areas would be more apparent if their hatch marks were another bright color. Making these simple changes would help convince the public that the Forest Service is actually trying to provide information, not hide it.

Problems with the Unit Card Maps include (DEIS Appendix B 3-232):

**SEACC 6** | The unit cards presented are deficient. They fail to show the public: steep slopes, soil Mass Movement Indexes, critical marten habitat, blowdown risk, and roadless areas. Although there is often discussion of some these factors in the text of the Unit Cards, the public would be better



## B Response to Comments

able to weigh the impacts and benefits of this proposed action if this information were presented in a clear and visual fashion.

This is particularly true of the areas of areas that contain steep slopes, high risk of windthrow, and high landslide potential. As noted in the text, this is a significant number of the units in the project area. How logging on these unstable areas will impact the other myriad uses of the project area, in particular fisheries and related subsistence, recreation, and tourism activities, is of significant importance to the public and their ability to comment on this proposed project.

### Logging in Dolores Watershed

As the Forest Service is aware, further logging in the Dolores Watershed on Suemez Island is a significant concern for members of the public, other land management agencies, and the conservation community (DEIS 1-16, DNR ACMP comments). There are roughly three miles of Class I streams, and three miles of Class II streams, as well as over 11 miles of Class III streams in the area, making it one of the most productive watersheds on the island. Runoff in this watershed is "extremely efficient" (DEIS 3-99) due to the area's steep terrain.

Approximately 19% of the watershed has already been logged, resulting in "windthrow, landslides and accelerated erosion" (DEIS 3-99). This has led to "increased sediments in the [mainstem] channel; increased channel width; decreased channel depth; and loss of channel complexity" (DEIS 3-99). Previous stream buffers have failed due to windthrow, further degrading the area's ability to sustain its fisheries. The cumulative impact of these logging and road building activities has substantially "inhibited the streams ability to recover naturally in a reasonable period of time" and "is a concern for existing and future fish habitat" (DEIS 3-100).

Despite these significant issues, the Forest Service's Proposed Action calls for more than doubling the acreage logged in the watershed (DEIS 2-21). Although the Forest Service includes an Action Alternative designed to address these concerns, Alternative 4, that alternative still calls for almost doubling the acreage logged in this heavily impacted watershed. Either alternative will have significant impacts to the watershed, further degrading its ability to return to a natural condition. These cumulative impacts require a thorough and well-researched investigation.

SEACC 7 | What sort of monitoring will the Forest Service conduct in order to document the long-lasting impacts to this important watershed that result from continued logging? How will this monitoring be paid? How will the existing "red pipes" be repaired, and what sort of mitigation measures will the agency undertake to ensure that further damage does not occur in the future?

SEACC 8 | The Forest Service is beginning to address management of second growth stands throughout the Tongass. As is increasingly understood, many of these areas require further Forest Service management once their old-growth timber has been logged. There is no analysis of how increasing this burden in a steep, windthrow and landslide prone area will be in the public's best long term interest. Likewise, there is little analysis of the economic costs of such future management requirements, or the economic costs associated with further degrading one of the island's premier fish producing watersheds.

SEACC 9

In addition, there is privately held land along the shores of Port Dolores. What sort of management activities are expected on the lands owned by the University of Alaska? How will these activities impact the adjacent Forest Service managed lands? What sort of cumulative impacts will the potential logging of additional acres in an already heavily impacted watershed have when they are added to acres cut by the University. The DEIS is silent on these and related significant issues.

## DEIS Fails to Adequately Analyze Impacts of Increased Motorized Vehicle Access

In April 2003, Chief Bosworth identified unmanaged recreation, particularly off-road vehicle use, as one of the four greatest threats to National Forests. He described a litany of adverse impacts caused by off-road vehicles, including soil erosion, habitat destruction, damage to cultural and sacred sites, and conflicts with millions of other visitors. He has also highlighted the unchecked proliferation of unauthorized – or renegade – ATV and dirt bike routes across National Forests and made clear that this problem is only going to get worse.

There are multiple users of our National Forests and the Forest Service should take these interests into account when making planning decisions. OHVs are one of many uses, but this use presents a high cost to the Forest Service related to management issues. OHVs have a high potential to damage many other resources in the long-term and may substantially interfere with and undermine other uses (such as backcountry hunting, fishing, hiking, subsistence, and enjoyment of solitude).

Roads provide OHV users with increased access to wildlife and other resources. Under the proposed action for the Scratchings Timber Sale project, 13 miles of new road and 6 miles of temporary road would be built, and 20 miles of existing roads would be maintained. Total miles of National Forest System Road on Suemez Island is currently about 28 miles (DEIS at 3-27). As proposed, the total mileage of permanent roads will increase by nearly 50% to 41 miles of road (DEIS at 7). This will provide significantly more access for forest users including hunters via OHVs. Despite this, the DEIS fails to acknowledge or analyze impacts to wildlife and other resources associated with increased OHV (off-highway vehicle) access provided by new roads.

SEACC 10

SEACC 11

The DEIS states that the main form of recreation on Suemez Island is hunting and that hunters use OHVs to access prime hunting locations from the road system (DEIS at 3-197). However, the DEIS fails to discuss potential impacts associated with increased OHV access; rather timber harvest activity is merely stated to benefit recreation (DEIS at 3-200). An analysis of impacts to wildlife and other resources associated with increased hunter access is completely absent from the DEIS.

While we recognize that motorized vehicles, including OHVs, are a valid recreational use on Suemez Island we are concerned about additional resource damage caused by such vehicles, including that which is due to illegal riding off the road system. Increased motorized vehicle



## B Response to Comments

access has the potential to damage many public resources, such as vegetation<sup>1</sup>, fish and wildlife habitat<sup>2</sup>, soil<sup>3</sup>, water<sup>4</sup> and air<sup>5</sup>.

### Impacts to wildlife:

SEACC 12 | The noise, pollution and very presence of off-road vehicles disturb wildlife resulting in displacement from habitat, nest or den abandonment, disruption of predator-prey dynamics and other changes in natural behavior. OHVs also reduce and eliminate vegetation. This results in a decrease in shelter, foraging areas, and perches and/or nesting sites that are critically important to birds and mammals. OHVs can also allow access for illegal harvest of wildlife. Increased OHV access is known to increase the trapping vulnerability of furbearers<sup>6</sup>. Impacts to wildlife from motorized recreation are well documented in the scientific literature, yet the DEIS inexplicably all but dismisses any such impacts associated with the extensive road-building that is proposed for this timber project.

### Impacts to soils and vegetation:

SEACC 13 | The Forest Service is mandated to manage habitats to maintain viable populations of plants. The scientific and ecological significance of sensitive plants is well documented and includes such impacts as erosion, clogging streams with sediment, and damaging wetlands. Road-building (and the presence of existing roads) results in soil compaction, increased erosion and runoff, reduced soil permeability to air and water, reduced soil moisture, reduction in soil depth and organic matter, reduction of groundwater recharge, alteration of hydrological flows, reduced nutrient cycling, increase in heat conductivity and a decrease in heat capacity of soil. Passenger vehicles and OHVs are known to spread invasive plants, yet the DEIS fails to address impacts to the habitats of Suenmez Island associated with increased motorized vehicle access.

### Impacts to subsistence and traditional hunting opportunities:

SEACC 14 | The DEIS fails to analyze the impacts of increased OHV access on traditional hunting opportunities, although OHVs are known to diminish such opportunities. OHVs are known to

<sup>1</sup> Brown, A.C., and A. McLachlan. 2002. Sandy shore ecosystems and threats facing them: some predictions for the year 2025. *Environmental Conservation*. 29 (1): 62-77.

<sup>2</sup> Viera, M.E.P. 2000. Effects of early season hunter density and human disturbance on elk movement in the White River area, Colorado. Unpublished M.S. Thesis. Fort Collins, CO: Colorado State University.

Wisdom, M.J., H.K. Preisler, N.J. Cimon, and B.K. Johnson. 2004. Effects of off-road recreation on mule deer and elk. *Transactions of the North American wildlife and natural resource conference* 69.

<sup>3</sup> Behnap, J. 2002. Impacts of off-road vehicles on nitrogen cycles in biological soil crusts: resistance in different U.S. deserts. *Journal of Arid Environments*. 52(2): 155-165.

<sup>4</sup> Havlick, David G. 2002. No place distant: roads and motorized recreation on America's Public Lands. Island Press Washington D.C. 297 pp

<sup>5</sup> Durbin, T.D., M.R. Smith, R.D. Wilson, S.H. Rhee. 2004. In-use activity measurements for off-road motorcycles and all-terrain vehicles. *Transportation Research Part d Transport and Environment* 9(3). 209-219.

<sup>6</sup> Weaver, J. 1993. Lynx, wolverine, and fisher in the western United States: Research assessment and agenda. USDA Forest Service Intermountain Research Station Contract Number 43-0353-2-0598. Missoula, MT.



displace wildlife and modify wildlife behavior and the noise from motorized vehicles is disruptive to the quiet solitude many hunters seek.

## Closures and enforcement

SEACC 15 | The Forest Service does not have the resources to adequately patrol current OHV use, let alone increased use resulting from new roads and access points. Detering illegal use and boosting accountability can only be accomplished by augmenting the ranks of law enforcement. Until resources are available to adequately enforce existing regulations and to repair existing resource damage we urge the Forest Service to be conservative when considering opening any new systems roads to OHV use. A network of extensive motorized travel routes, resulting from road-building and the maintenance of existing roads, may also increase improper cross-country OHV use by irresponsible users unless the agency can provide adequate enforcement. As detailed above, motorized use can also fragment and degrade critical wildlife habitat.

SEACC 16 | The issues discussed above should be considered as "significant" warranting detailed analysis in the final EIS for the Scratchings Timber Sale.

## Consideration of Wind Disturbance Factors Was Incomplete

Wind disturbance (stem snap, windthrow, related erosion) is given brief mention at several points in the DEIS; however, important factors have been overlooked and an improved, comprehensive analysis is needed. A combination of the Scratchings project's location on an outer island (exposed to high winds), characteristics of the area's soils, forest stands, and topography, and increasing regional wind influence due to climate change create substantial risks that make the project's interrelationship with wind disturbance a key issue. It is an issue that has significant implications for wildlife and subsistence.

SEACC 17 | Wind disturbance is discussed on pages 3-78 to 3-81, 3-84, 3-86, 3-89, 3-90, 3-98, 3-100, and 3-115 of the DEIS, and is a topic on most of the unit cards. The primary discussion is on pp. 3-78 to 3-80 in the Timber and Vegetation section, but probably because of that section's specific focus the discussion is not thorough or comprehensive. The discussions on pages 3-98 and beyond are in sections about resources other than timber and vegetation, and are scant. We request adding to Chapter 3 a section devoted entirely to wind disturbance, on which other sections of the chapter can then expand. This comprehensive section should include a thorough discussions of increasing of storm intensity and frequency due to changing climate and of the existing wind-affected environment. The relevant direct and cumulative effects of the project could be analyzed both there and in resource-specific sections of the chapter.

SEACC 18 | In addition, a map of Suemez Island showing wind disturbance risk categories should be provided in the EIS.

## Other Aspects of Wind Disturbance Effects Need a Hard Look, Absent in the DEIS.

SEACC 19 | A recent paper, *Wind in the Forests of Southeast Alaska and Guides for Reducing Damage* (Harris 1999, PNW-GTR-244) raises issues that should be considered in planning this project and in the NEPA review. The document is not mentioned in the DEIS, and apparently was not

## B Response to Comments

considered. It has direct application to this project, although we note that a weakness is that it does not take the changing climate into account, and instead views the climate as static. The data it is based on is nearly 30 years old, predating most of the climate changes noted in Juday et al. (1998), although some of the personal observations the author relied on may be more recent. Harris (1999) points out that "Many recommendations for reducing losses from blowdown have appeared in the literature. Most recommendations are concerned with clearcutting, especially with locating windfirm cutting boundaries and general advice on management strategy. The recommendations are based on observation and common sense with little or no experimental data. To what extent application of these recommendations has reduced damage is not known because accurate methods of evaluation have not been devised. When strong gales hit, blowdown is inevitable ..." The point here is that the effectiveness of the project's unit prescriptions, buffers, best management practices is largely conjecture, and the assessment of impacts is less certain than is apparent. This needs to be disclosed in the EIS, and a margin of safety needs to be incorporated into the actions taken in order to reasonably assure that windfirmness will be achieved.

SEACC 20

On a related topic, planning for this project includes "reasonable assurance of windfirmness buffers" (RAW buffers), in addition to conventional buffers and other windfirmness measures. This is a specific use of the term reasonable assurance, in contrast to the general usage in the paragraph above. The term "reasonable assurance" is not defined in the DEIS for either of these usages. The risk that windfirmness will not be achieved is not quantified or described for any of the windfirm applications in the DEIS. The possible consequences of not achieving the intended windfirmness are not disclosed.

SEACC 21

Based on experience and the literature, Harris (1999) recommends:

"Plan complete logging and road layout for a drainage for an entire rotation in advance of logging; identify each potential cutting unit and (wind) protection stand in advance. The progress of cutting should be planned to take advantage of windfirm boundaries, opportunities for progressively cutting toward the prevailing storm winds, and periodic salvage of blowdown."

We believe that doing this for the Scratchings project is essential to the NEPA process because it will disclose to the public the cumulative planning that the Forest Service is now engaging in for Suemez Island under the foreseeable eventual extent of logging on Suemez Island, as envisioned by the Forest Plan. This is necessary not only for NEPA-required disclosure, but also for analysis of foreseeable cumulative impacts.

SEACC 22

We note that many of the Scratchings DEIS unit cards describe the risk of windthrow as being high, very high, or extreme "at upper elevations of the unit," but decreasing to moderate or low risk at lower elevations. Perhaps these observations are true; however if so, a discussion should be provided of why the situation is different in these units than as generally described here by Harris (1999), after studying over 1000 plots on Prince of Wales island.

SEACC 23

"Most damage occurred at low elevations, and the extent of damage generally decreased with elevation, probably because most commercial stands occur at low



elevations. The higher rates of damage found at higher elevations might be attributable to increased exposure and to the thin, rocky soils.”

To clarify the statement, note from Table 15 (id.) that the highest rate of damage was in the 0-200' elevation band. The “higher rates of damage” were less intense and in the 401-600' band and several bands over 1000' Harris stated similarly (for Prince of Wales Island):

“Most blowdown occurred at low elevations, and in general, damage decreased with increasing elevation. ... Comparison of blowdown with distribution of productive forest land showed that the highest rate of blowdown (2.86 percent) occurred below 200 feet in elevation. ... A similar situation was noted in Ireland by Kennedy (1974), who concluded that reduced rooting strength at low elevations more than offsets the advantage of greater protection from the wind.” (Id.)

**SEACC 24** | The DEIS does not fully disclose what the project’s planners consider to be a windfirm buffer. A description of such buffers is given on DEIS p. 3-88, but the criteria include only the width of the buffer zone (one site-potential tree height), partial cutting within the first 50 feet of the buffer to create feathering (removal of 50% of the basal area), and a roughly-described priority system for retained trees. Not mentioned and apparently not considered are factors such as character of the forest in the buffer and beyond, soil condition, topography, elevation, possible exposure to high winds, etc. Clear criteria need to be laid out to assure that windfirmness will be achieved.

**SEACC 25** | Finally, the Timber and Vegetation section of the DEIS made the most mention of wind disturbance, yet in its “Effects of Alternatives” subsection it fails to mention any effects of the action alternatives regarding wind disturbance.

## Logging on Steep Slopes

As noted in the map section, there is a significant amount of logging and road building proposed in areas with steep slopes. This obviously has weighty consequences for the future condition of the island, as logging and road building have been shown to lead to increased landslide and blowdown potential. Indeed, the analysis of previous logging in certain watersheds, such as Dolores, shows that such activities lead to significant long-term impacts to the diverse other uses of the forest.

Although it is impossible to determine the extent of windthrow or landslide prone areas throughout the project area, due to their not being graphically represented in the Unit Cards, the text of the Unit Cards make it clear that a significant portion of this project will impact areas that are already susceptible to disturbance. Given what is already known, some of which is documented in the DEIS, about unstable soils, landslide and windthrow areas, exasperating these conditions with additional logging and roading is not in the public’s best long term interest.

**SEACC 26** |

## Heritage Concerns

Although the Forest Service spends two pages (DEIS 3-202), of well over 500, discussing the potential impacts to Heritage Sites on the island resulting from this proposed project, this analysis barely scratches the surface. Discussions with members of the Hydaburg and Craig



## B Response to Comments

Community Associations indicate that there is a strong likelihood of not only Native, but Spanish, heritage sites on the island. Although these may be along the coastline, and protected by the 1,000 foot coastal buffer, the analysis contained in the DEIS does not leave the public with the feeling that the Forest Service is serious about discovering and protecting these important sites. This is particularly true in the Port Refugio and Port Santa Cruz areas, areas known for their recreation use. Please provide further analysis illustrating that these issues are being considered and monitored.

SEACC 27

For example, what sort of process is in place to ensure that should an additional site be uncovered it will be protected? What sort of monitoring of the dozen or so sites known to be on the island will the Forest Service undertake? How will these activities be funded?

### Recreation Concerns

There is little analysis of the current or anticipated future needs for recreation on the island. Although it is noted that the island is used for hunting, beach combing, hiking, and exploring caves (DEIS 3-197), there is little analysis of the demands of any of these activities on the landscape. For example, there is no discussion of the island's carrying capacity as it relates to recreation. There is no analysis of how increased road density will influence the recreational activities on the island, or how increased motorized recreation on the island will displace human-powered recreation.

SEACC 28

Although the Suemez Roadless Area is noted for its high opportunity for solitude and primitive recreation (FLMP SEIS, App C at 2-294), there is little analysis of how adding an additional 20 miles of road will impact these opportunities.

SEACC 29

Likewise, the impacts of changing the Recreation Opportunity Spectrum (ROS) classification for hundreds of acres in order to better accommodate logging are not fully examined. Where is the demand for increased motorized recreation? Although the Forest Service may state that "timber harvest is generally considered a benefit" (DEIS 3-200) to recreation, that does not make it so.

SEACC 30

Before changing the character of recreation opportunities on the island, the Forest Service needs to examine what the carrying capacity for motorized recreation is, how an increase in motorized recreation will impact endemic mammals, deer, wolves, and other sensitive species, and what these impacts mean to the people who hunt and/or trap on the island as part of their traditional subsistence activities.

SEACC 31

### Minimizing the Impact of the Proposed Project

The Forest Service took a step in the right direction by including Action Alternatives that address some of the public's concerns about the proposed project. Specifically, the inclusion of an alternative that reduces logging in the Dolores Watershed, another one that addresses economic concerns, and an Action Alternative that reduces the project's impact to the inventoried roadless area are all indications that the Forest Service is at aware of that people can have concerns about a particular logging project and still support a reasonable, high-value added timber industry that does not significantly impact the many diverse uses of the forest. It is with this in mind that we offer the following suggestions to make this a truly adaptive logging proposal – one that does not

needlessly sacrifice the voiced concerns and desires of both the people who live in the region, as well as the American tax-payer.

Alternative 4 is seen by many to be the preferred alternative. Hopefully, the Forest Service will listen to the public, as well as the state's Department of Natural Resources, and select Alternative 4 as its preferred alternative. This alternative is only 5 mmbf smaller than the current Preferred Alternative, Alternative 3. Alternative 4 also reduces the number of miles of road constructed, further reducing logging costs.

Alternative 4 minimizes road building in the area between Port Santa Cruz and Port Dolores, reducing the impacts to some of the islands most productive habitat. This area has been identified by current Audubon and The Nature Conservancy biological research as being some of the most biologically rich on the island. If logging is to occur on the island, it is critical that this area not be impacted by logging activities. For these reasons, we recommend that Alternative 4 be modified by eliminating units 6340-044 – 6340-047, inclusive.

SEACC 32

Unit 634-005 should be replaced with Unit 634-005a. This would reduce road building costs, and still allow timber to be logged from the existing road system. In order to further reduce road building costs, both immediate and long-term, Units 6350-014, - 015, and -016 should be replaced by Units 6350-014a, -015a, -015a. This will reduce the amount of timber removed, but it would also reduce the logging costs. In addition, the possibility of logging unit 6350-015a by extending the 1080740 road from its eastern terminus, rather than creating a new intersection in the previously clearcut unit 502/1985, could further reduce logging costs.

The operator should also have the option of not logging Unit 6330-066 because of its low volume. In addition, this unit is pinched in-between several Class III streams and has a high risk of windthrow, indicating that riparian buffers will likely fail, causing further degradation to important fish habitat. If the unit is logged, it should be done so from the 1080 road only.

If logged, units 6340-011, 6340-100, and 6340-101 should be logged from the existing road system, road 1080820, and via helicopter only. As is noted throughout the DEIS, the Dolores Watershed is not only an important fish producing watershed, it is also an area that has been heavily impacted by previous logging. Creating more roads in this landslide and windthrow prone area is not a wise investment for either the area or the U.S. taxpayer.

To compensate for the lost volume, Unit 6350-013 could be added to the alternative.

By modifying Alternative 4, the Forest Service can create a logging proposal that permits logging while reducing the impacts to other important ecological and community use values. This would allow a significant amount of timber to be logged, would incorporate the inter-agency biologists recommendations for Old Growth Reserves, would reduce logging impacts to an already heavily impacted and extremely fecund watershed, and would also reduce logging impacts to the habitat-rich area between Port Dolores and Port Santa Cruz.

## B Response to Comments

SEACC 33 | Of course, logging should only occur if logs are put on a barge at the Port Refugio Log Transfer Facility (LTF). This is a requirement.

Thank you for your attention to these comments.

A handwritten signature in black ink, appearing to read "Dave Sherman", with a long horizontal stroke extending to the right.

Dave Sherman  
Grassroots Organizer



### Responses to SEACC – Southeast Alaska Conservation Council, Dave Sherman

**SEACC 1** - Please see response to SCS 47.

**SEACC 2** - Please see response to SCS 48.

**SEACC 3** - Please see response to SCS 49.

**SEACC 4** - Please see response to SCS 50.

**SEACC 5** - Please see response to SCS 51.

**SEACC 6** - Please see response to SCS 52.

**SEACC 7** - Please see response to SCS 54.

**SEACC 8** - Please see response to SCS 55.

**SEACC 9** – The Draft EIS stated in Chapter 1, University of Alaska Lands, that no activities are planned on the University of Alaska land. Since there are no reasonably foreseeable actions on these private lands, there are no cumulative effects related to these private lands.

**SEACC 10** – Please see response to SCS 88.

**SEACC 11** – Please see response to SCS 89.

**SEACC 12** - Please see response to SCS 90.

**SEACC 13** - Please see response to SCS 91.

**SEACC 14** - Please see response to SCS 92.

**SEACC 15** - Please see response to SCS 93.

**SEACC 16** - OHV use was analyzed in the EIS and was not considered significant for the reasons discussed in responses to SCS 88 through 93. Please see responses to SCS 88, 89, 90, 91, 92, and 93.

**SEACC 17** – Please see response to SCS 70.

**SEACC 18** – Please see response to SCS 71.

**SEACC 19** - Please see response to SCS 73.

**SEACC 20** - Please see response to SCS 74.

**SEACC 21** - Please see response to SCS 75.

**SEACC 22** - Please see response to SCS 76.

**SEACC 23** - Please see response to SCS 77.

**SEACC 24** - Please see response to SCS 78.

**SEACC 25** - Please see response to SCS 79.

**SEACC 26** - Please see response to SCS 56.

**SEACC 27** - Please see response to SCS 57.

**SEACC 28** - Please see response to SCS 58.

## **B Response to Comments**

**SEACC 29** – Please see response to SCS 57.

**SEACC 30** – Please see response to SCS 58.

**SEACC 31** – Please see response to SCS 59.

**SEACC 32** – Alternative 4 has been modified in the Final EIS by removing Units 634-044, 634-045, 634-046, and 634-047. Alternative 4 has been further modified by the removal of the helicopter portion of 634-005. The decision maker also has the option to replace 635-014 with 635-014a, 634-015 with 634-015a, and 635-016 with 634-016a in the decision. Helicopter yarding of Units 634-011, 634-100, and 634-111 already has been considered and is an option available to the decision maker; please see the unit cards in the Draft EIS. Additionally, the decision maker has the option to include 635-013 to add volume to the alternative.

Regarding your roading suggestion for Unit 634-015a, extension of the eastern terminus of the existing 108074 to access Unit 634-015a was considered during the planning process. However, field reconnaissance showed it to be problematic due to gradient and stream crossing issues not readily apparent in the road cards. Construction of 108741 to access the unit was determined to be a better option.

Your suggestion to give the operator the option to harvest, or not harvest, Unit 633-066 will be considered at the time of the contract preparation, if that unit is part of the Selected Alternative.

**SEACC 33** – The existing LTF at Port Refugio will be used. A redesign to allow barge loading of logs is being assessed. However, the permit for operation of this LTF does allow for placing logs in the water. Barging has become a common practice, but we retain the option of rafting logs at this site. The Essential Fish Habitat assessment in the Draft EIS includes analyses of both barging and rafting.

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